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ADMIRAL
MODEL RC221—RC222

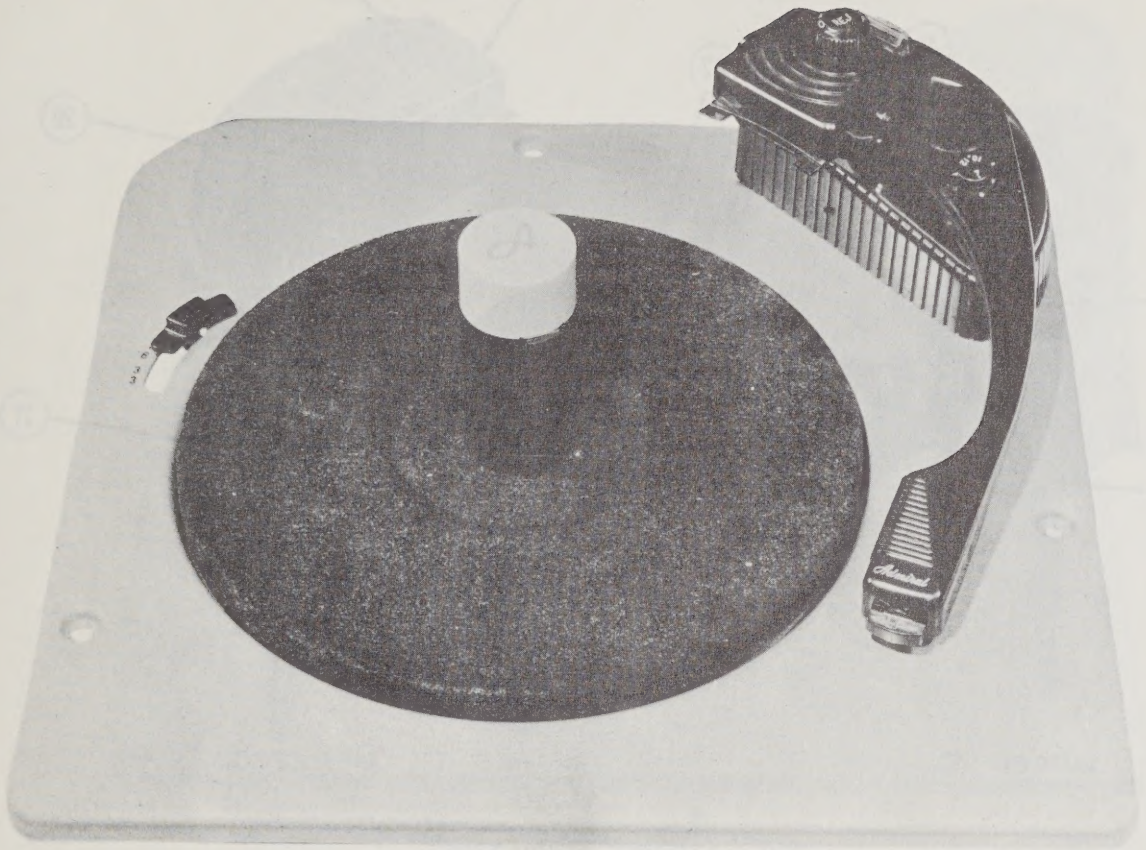

FIGURE 1

GENERAL INFORMATION

The Models RC221 and RC222 record changers are designed to automatically play a series of twelve 10-inch, or ten 12-inch, 78 RPM or 33 RPM records. They will also automatically play ten 7-inch 33 RPM records, or twelve of the new 7-inch 45 RPM records, by using an accessory 7-inch centerpost and an accessory 45 RPM Spindle Unit. The records must be of one size, and of each type, for each loading. The last record will be repeated until the changer is turned off.

The only difference between the RC221 and RC222 is the shape of the pan.

Manufactured by:

ADMIRAL CORPORATION, 3800 CORTLAND STREET, CHICAGO, ILLINOIS

ADMIRAL
MODEL RC221—RC222

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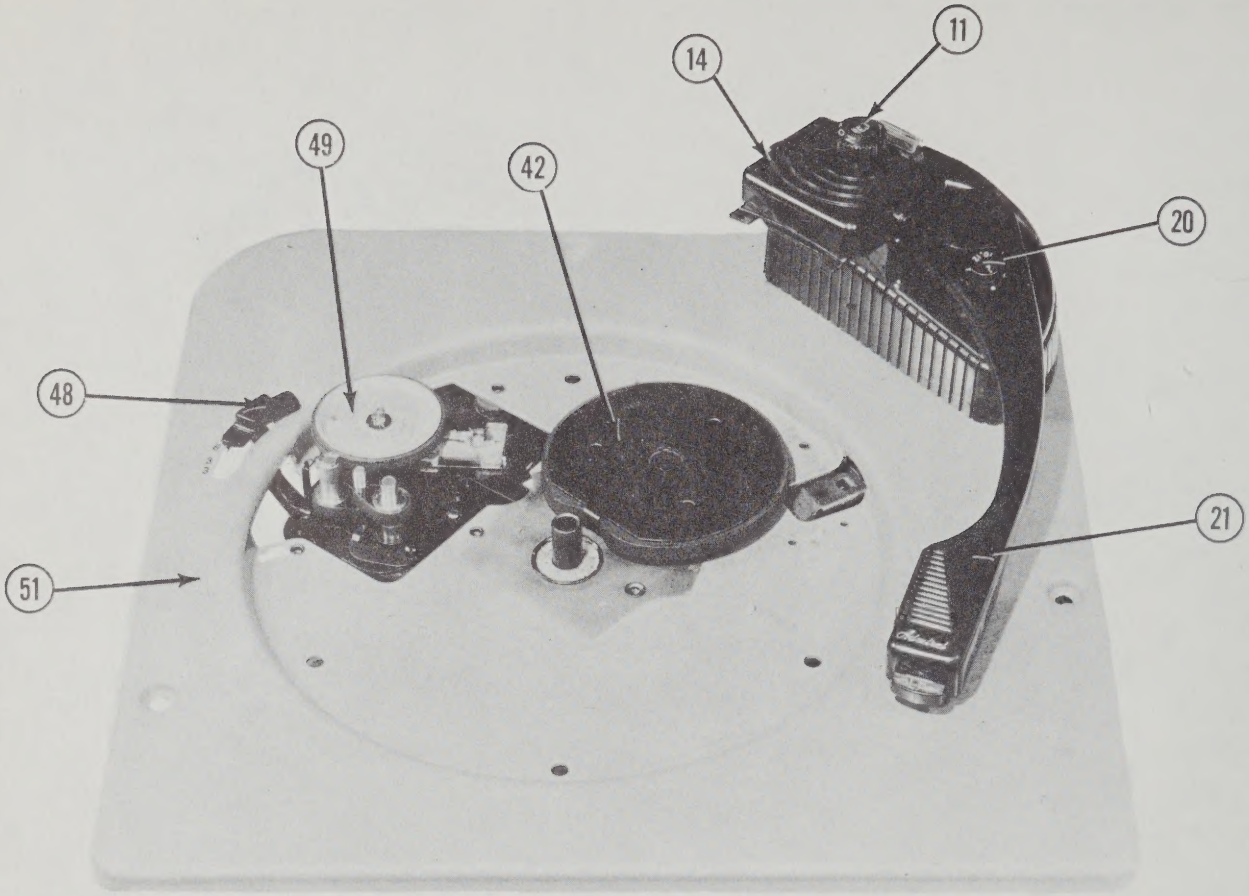


FIGURE 2

PREPARING FOR OPERATION

Selecting Centerpost (See Figure 3)

To play 78 RPM or 33 RPM records (10-inch or 12-inch records), insert spindle (7B), Figure 3, into the socket in the center of the turntable. To play 7-inch 33 RPM records, insert spindle (7C). Be sure the spindle is all the way down in its mounting. To remove a spindle, merely place one hand on the turntable and lift up the centerpost with the other hand. To play 45 RPM 7-inch records, insert the 45 RPM spindle (7A) into the socket in the center of the turntable. Turn the spindle counterclockwise until the *lock-in* lugs fall into and lock in the three holes in the turntable. To remove the spindle, hold the turntable stationary, turn the spindle clockwise, then lift it out of the socket.

IMPORTANT: If the 45 RPM spindle is being used for the first time, or if the changer does not operate properly on 45 RPM, be sure to read the information given under the heading "45 RPM Spindle Adjustment."

Setting Speed-Control Knob

To play 78 RPM records (standard records), move the speed-control knob (48) to the "78" position. To play 33 RPM records (long play and the 7" records using .286" center hole), move the speed-control knob (48) to "33" position; for 45 RPM records (7" records using 1⅞" center hole), move knob to "45" position. When moving the speed-change knob, make certain that it clicks, or snaps, into position.

Setting Needle Selector Knob

To play 78 RPM 10-inch and 12-inch records, rotate the cartridge control knob (40) so that the side marked "78" faces up: to play 45 RPM 7-inch records, and 33 RPM 7-inch, 10-inch, and 12-inch records, rotate the knob so that the side "LP" faces up. The small arrows next to the "78" and "LP" indicate the direction in which the knob must be turned. When turning this knob to either position, make certain that it is turned until it reaches its stop.

Setting Head Assembly

To play 7-inch or 10-inch records, rotate the head assembly (14) so that the embossed design on the cover is toward the spindle. For 12-inch records, rotate the head assembly (14) so the embossed design is away from the spindle.

Setting Record Size Selector Knob

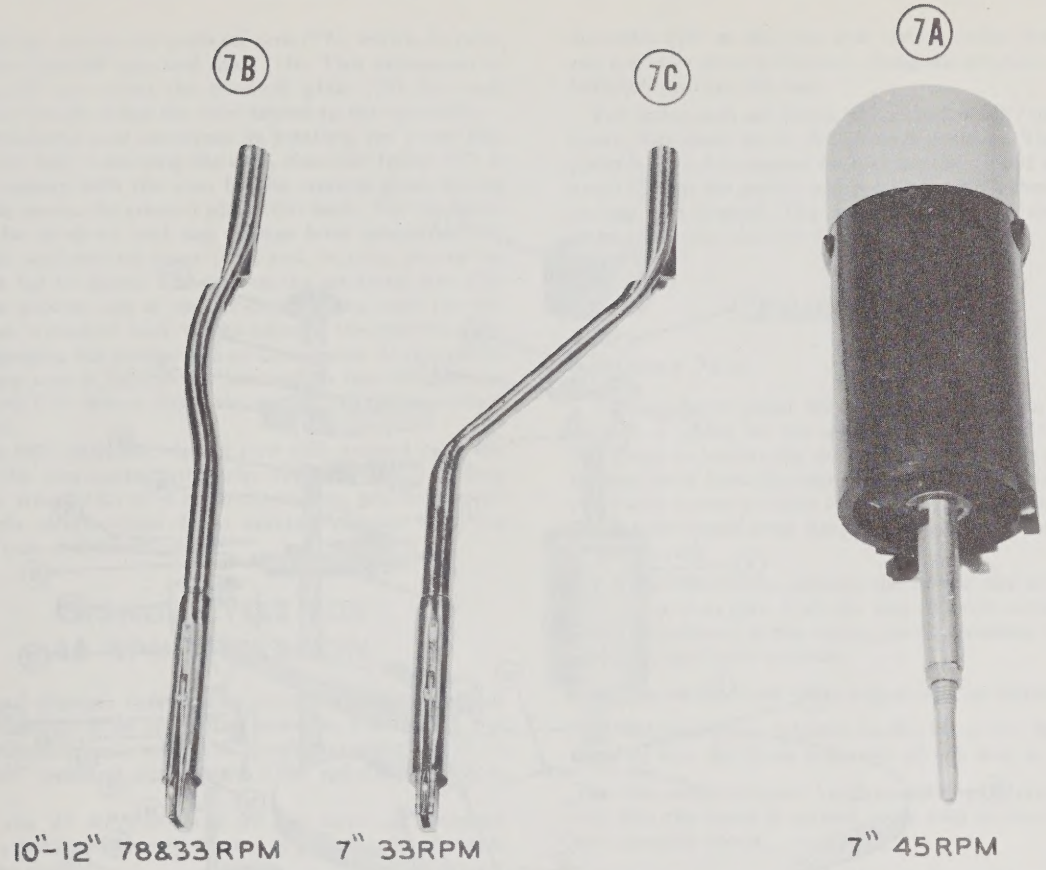
To play 7-inch records, turn the record size selector knob (20) counterclockwise until it reaches its stop.

To play 10-inch and 12-inch records, turn the knob clockwise until it reaches its stop.

Loading and Starting the Changer

To load 78 RPM or 33 RPM records, place a stack of records so that they will rest on the step of the spindle and the record shelf (18). Do not mix records.

To load 45 RPM records, place as many as twelve rec-



SEE ITEM 7 PARTS LIST

FIGURE 3

ords over the 45 RPM spindle, so that they rest on the record supports (4). Be sure that the records are held up by both record supports (4).

To start the changer, turn the "On-Off-Reject" knob (11) to the "On" position. This starts the turntable revolving. To start the automatic changing operation, press down on the "Reject" knob (11) and release. The changer will now play the entire stack of records and will repeat the last record until the changer is turned off.

A record may be rejected any time, while playing, by pressing down on the "On-Off-Reject" knob (11).

Stopping the Changer

This changer cannot be turned off, by means of the "On-Off-Reject" knob, during its change cycle. Therefore, after the last record, allow the mechanism to go through its change cycle and start playing over again; then, turn the knob (11) to the "Off" position.

CHANGE CYCLE FOR 78 RPM AND 33 RPM OPERATION

The changing mechanism may be set in motion by one of two means:

1. By pressing down on the "On-Off-Reject" button (11). This causes the Push-Off cam and shaft assembly (16) to move the push-off arm and link assembly (93) down to engage the reject arm (79), which, in turn, pivots the reject arm support and trip lever (80) far enough so that the trip stop wire is no longer engaged with the stud on the control cam (98).

2. As the pickup arm moves into the eccentric groove of the record, the oscillation of the pickup arm causes the pawl on the arm control lever (63) to engage the serrations on the trip plate (81). This engagement straightens the pawl, and, as a result, moves the trip lever (80) far enough so that the trip stop wire is no longer engaged with the cam stop stud.

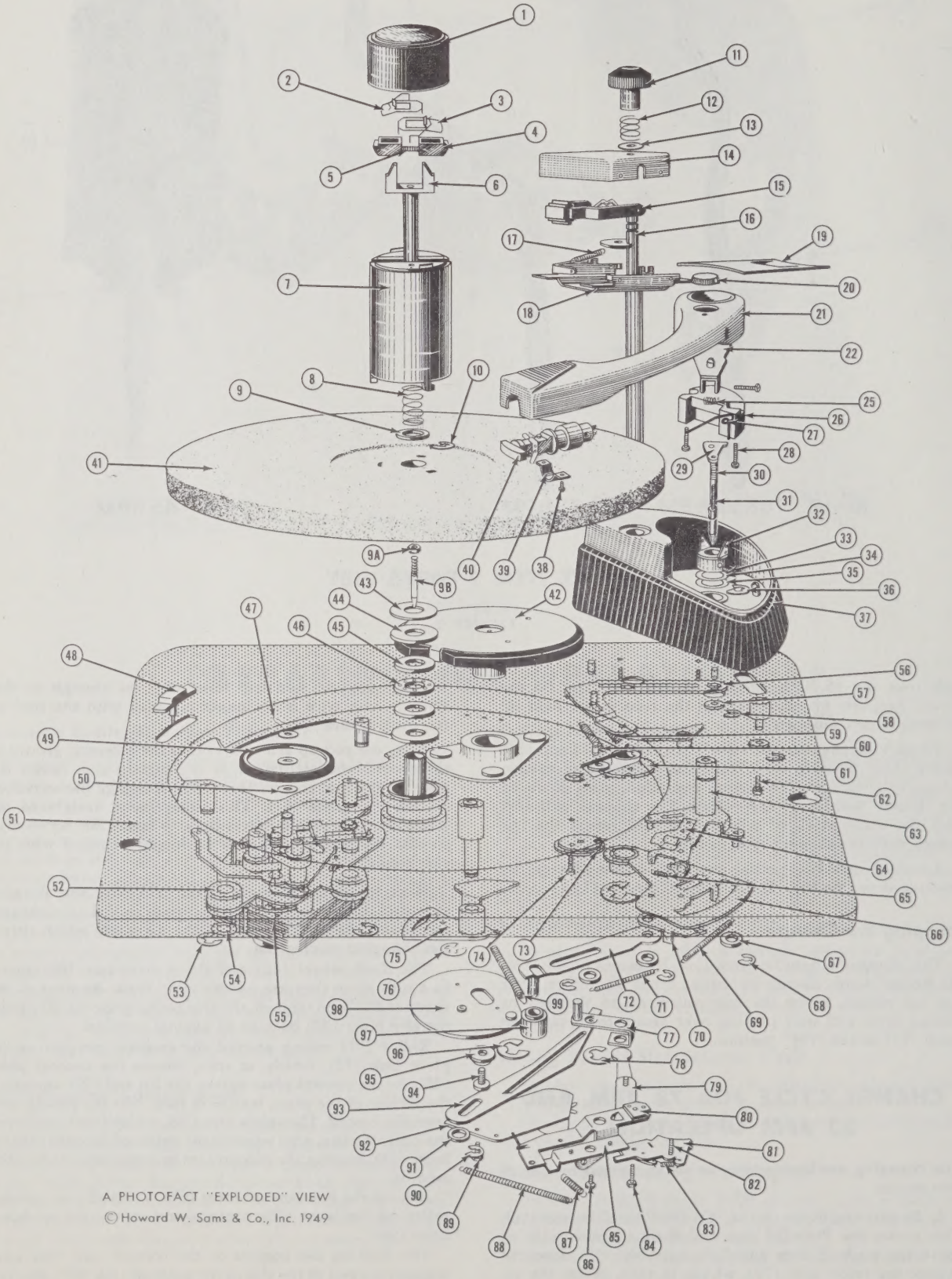
With the disengagement of the trip wire and the cam stop stud, the drive wheel (42) is then pulled into engagement with the knurled hub of the turntable which drives the changing mechanism.

The drive wheel (42) and the control cam (98) rotate as a unit since they are on the same shaft. As soon as the changer has been tripped, the trip cocking spring (87) pulls the trip lever (80) back to its normal position.

Roller (97) riding around the control cam moves the pivot link (72), which, in turn, rotates the control plate (66). As the control plate moves, the lift rod (29) moves up the incline of the plate, which, in turn, lifts the pickup arm from the record. The safety arm (70), which is pivoted from the control plate, now engages the roller of the arm control lever (63), causing the pickup arm to move out clearing the records.

Also, as the arm control lever (63) is moved out, another roller on the lever (63) contacts and moves the set-down lever (56).

The stud on the bottom of the control cam (98) now engages the end of the slot in the push-off link (93), moving



A PHOTOFACT "EXPLODED" VIEW

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it. This action moves the push-off arm (77), which, in turn, rotates the push-off cam and shaft (16). This movement of the push-off cam slides the push-off plate (19) forward, which, as a result, drops the next record to the turntable.

As the control cam continues its rotation, the pivot link (72) moves back following the cam, since the roller (97) is held in contact with the cam by the control plate spring (71). This moves the control plate (66) back. The set-down arm of the set-down and size change lever assembly (56) moves the arm control lever (63), and, in turn, moves the pickup in for set down. The step on the set-down arm (56) holds the pickup arm at the set-down point until the set-down arm is pushed back by the edge of the control plate when engaging the stud on the set-down arm. At this point, the pickup arm is free and is lowered to the turntable as the lift rod (29) moves down the incline tab of the control plate (66).

Spring (99) pulls the control cam (98) around until the stud on the cam contacts the trip stop wire, thus holding the drive wheel (42) in a neutral position, preventing the tire of the drive wheel from making contact with the knurled hub of the turntable.

CHANGE CYCLE FOR 45 RPM OPERATION

The record changer functions in exactly the same manner as for 78 and 33 RPM operation; however, a few parts, not yet described, operate when the speed change knob (48) is in the "45" position and the 45 RPM spindle (7A) is in place.

Since the 45 RPM records do not have an eccentric groove, a position-type trip is used to trip the changer into its change cycle.

(See Figure 5) When the speed change knob is moved to the "45" position, the tension of the position trip cord (100) is released. This allows the engagement arm (81A) and screw (82) to be pulled into the path of the position trip incline (64); therefore, as the pickup arm nears the center of the record, the trip adjusting screw (82) engages the position trip incline (64), thereby moving the trip lever (80) enough so the trip wire is no longer engaged with the control cam stop stud. The changer then goes through its change cycle as it does for 78 and 33 RPM records.

After the control cam (98) has rotated approximately one third of its rotation, the riser control stud engages the riser plate (75), driving the riser plate counterclockwise so that its incline portion engages the push-off adjusting shaft (9B) on the 45 RPM spindle. This pushes the push-off adjustment shaft (9B), and the slicer cam and shaft assembly (6), up into the spindle.

As the slicer cam and shaft raises, its sides push the slicers (2 and 3) outward, thus separating the two bottom records, and at the same time, the record supports (4) are moved into the spindle. This allows the bottom record to drop to the turntable while the remainder of the stack is held up by the slicers (2 and 3).

As the control cam continues its rotation, the control stud moves away from the riser plate (75), thus returning the spindle to its normal position allowing the record stack to drop from the slicers to the record support.

DETERMINATION OF THE SET-DOWN POINT

When the record changer is set to play 10-inch records, the set-down arm of the set-down and size change assembly (56), through the tension of the spring (59) and the eccentric (61), moves the arm in toward the spindle. This lengthens the distance the arm return roller has to travel before it reaches the step on the set-down arm (56).

When the changer is set for 12-inch records, the size change eccentric (61) moves the set-down and size change assembly (56) so that the arm return roller and stud does not travel as great a distance along the set-down arm lever before it reaches the step.

For seven-inch set down, the record shelf (18) and head cover (14) must be in the 10-inch position. The set-down point is then determined by turning the record size selector knob (20) to the seven-inch position, which then pivots the pickup arm inward. The set-down operation then acts the same as for ten-inch set down.

ADJUSTMENTS

Set-Down Point

The set-down point for the 7-inch, 10-inch, or 12-inch records is made by the adjustment screw (23). Turning the screw in moves the set-down point of the pickup arm farther away from the spindle. Turning the screw counterclockwise moves it closer to the spindle. Correctly adjusted, the needle should land approximately ⅛" in from the edge of the record.

CAUTION: When turning the record size selector knob (20), be sure to turn it all the way to avoid making the set-down adjustment at the wrong point, resulting in improper set-down on 7-inch records.

Make the set-down point adjustment as follows:

1. Set record size selector knob (20) to the 10"-12" position; be sure the knob is turned all the way to its stop.

2. Set needle selector knob to either position, being certain that the knob is turned to its stop so the needle projects straight down.

3. Set the head assembly (14) to the position for playing 7-inch or 10-inch records.

4. Press down on the "On-Off-Reject" knob (11) momentarily. Rotate the turntable, by hand, through the change cycle until the pickup arm moves down toward the turntable.

5. Check the distance between the needle point and the near side of the centerpost. For proper set down on 10-inch records, the distance between the needle and spindle should be between 4⅜" and 4 11/16".

6. Adjust the set-down adjusting screw (23) and repeat steps 4 and 5 until the proper distance is obtained. If the adjustment is made carefully, the set-down point for 7-inch and 12-inch records will be automatically correct.

Pickup Arm Height

The changer is designed so that, when either needle point rests 3/16" above the changer pan, the pickup arm (21) will automatically lift high enough, during the change cycle, to clear the top record of a stack of twelve 10-inch, ten 12-inch, ten 7-inch 33 RPM, or twelve 7-inch 45 RPM, records on the turntable. With proper pickup arm height setting, the pickup arm will not lift high enough to strike the bottom record of the stack to be played.

The pickup height may be adjusted by turning screw (31). The adjustment is made with the changer out of cycle.

Trip Cord Tension Adjustment (See Figure 4)

If the trip cord (100) is not adjusted properly, it may cause the failure of tripping mechanism for 45 RPM records.

If the position trip cord (100) is being replaced, or if the adjusting cam lock screw (74) has come loose, allowing the cord tension adjusting cam (73) to rotate away from its normal position, proceed as follows:

1. Set the speed change knob (48) to the "45" position.

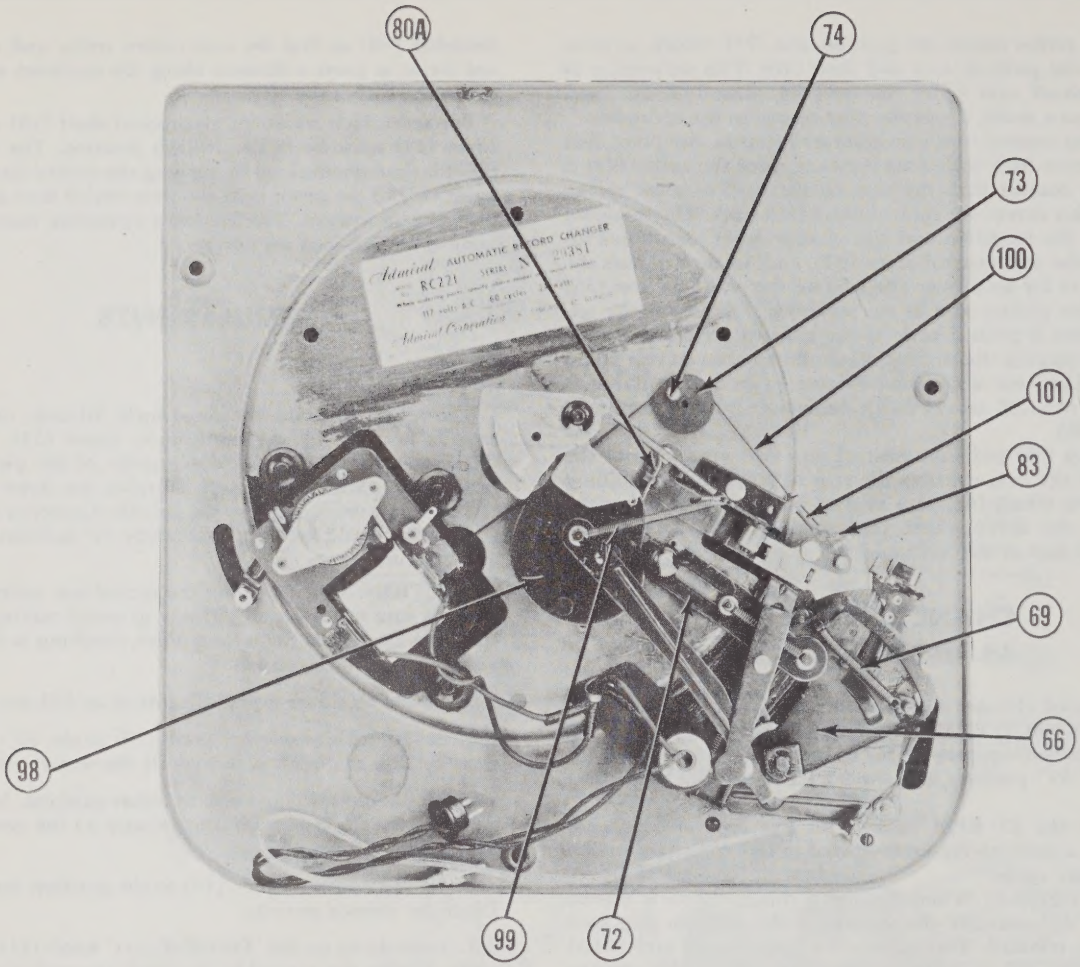

FIGURE 4

2. Move the cord tension adjusting cam (73) to just the point where all slack has been removed from the position trip cord (100), so that there is just a very slight tension on the cord tension spring (101). Do not adjust it so tight as to stretch the position trip cocking spring (83).

3. Tighten the adjusting cam lock screw (74).

Adjustment of the 45 RPM Spindle

The push-off adjusting shaft (9B) is the only adjustment on the 45 RPM spindle. To check the spindle to see if it is correctly adjusted:

1. Place the spindle in the hole of the turntable and turn it so that the "lock-in lugs" fall into the slots in the turntable (do not lock the lugs into the turntable).

2. Press down on the spindle and note whether or not the slicers (2 and 3) just start to move out of the spindle.

3. If the slicers do not move out when the spindle is pressed down, load the changer with records:

a. Lock the spindle in place.

b. Load the spindle with records.

c. Turn the changer on and press down on the "Reject" button (11). If the bottom record drops to the turntable, keep rejecting records until the whole stack has been dropped to the turntable. Each record should slide smoothly down the spindle; if all the records drop properly, the adjustment is correct. However, if the records do not drop, or the slicer protrudes from the spindle (see 2—"Adjustment of the 45 RPM Spindle"), remove the spindle, loosen the lock nut (9A), and turn the adjusting shaft (9B) in the direction needed to correct this adjustment. Repeat this procedure until the records drop properly.

TROUBLES

Changer Will Not Trip

1. Check for loose, or broken, cycle spring (99), Figure 4.

2. Check to see if the oscillating trip adjusting screw (84) is adjusted properly. This screw adjusts the trip serration plate, so that the plate will be actuated by the pawl of the arm control lever (63) when the oscillation of the pickup arm takes place.

3. Check for bent trip wire (80A), Figure 4.

4. Check for broken pawl spring (65), Figures 4 and 5.

Continuous Tripping

1. Check for bent trip wire (80A), Figure 4.

2. Check for broken trip cocking spring (87).

3. Check for binding of the push-off arm and shaft (16) exploded view.

Pickup Arm Does Not Set Down Properly

1. Check for weak, or broken, set-down spring (59).

2. Check for broken adjusting lock spring (25).

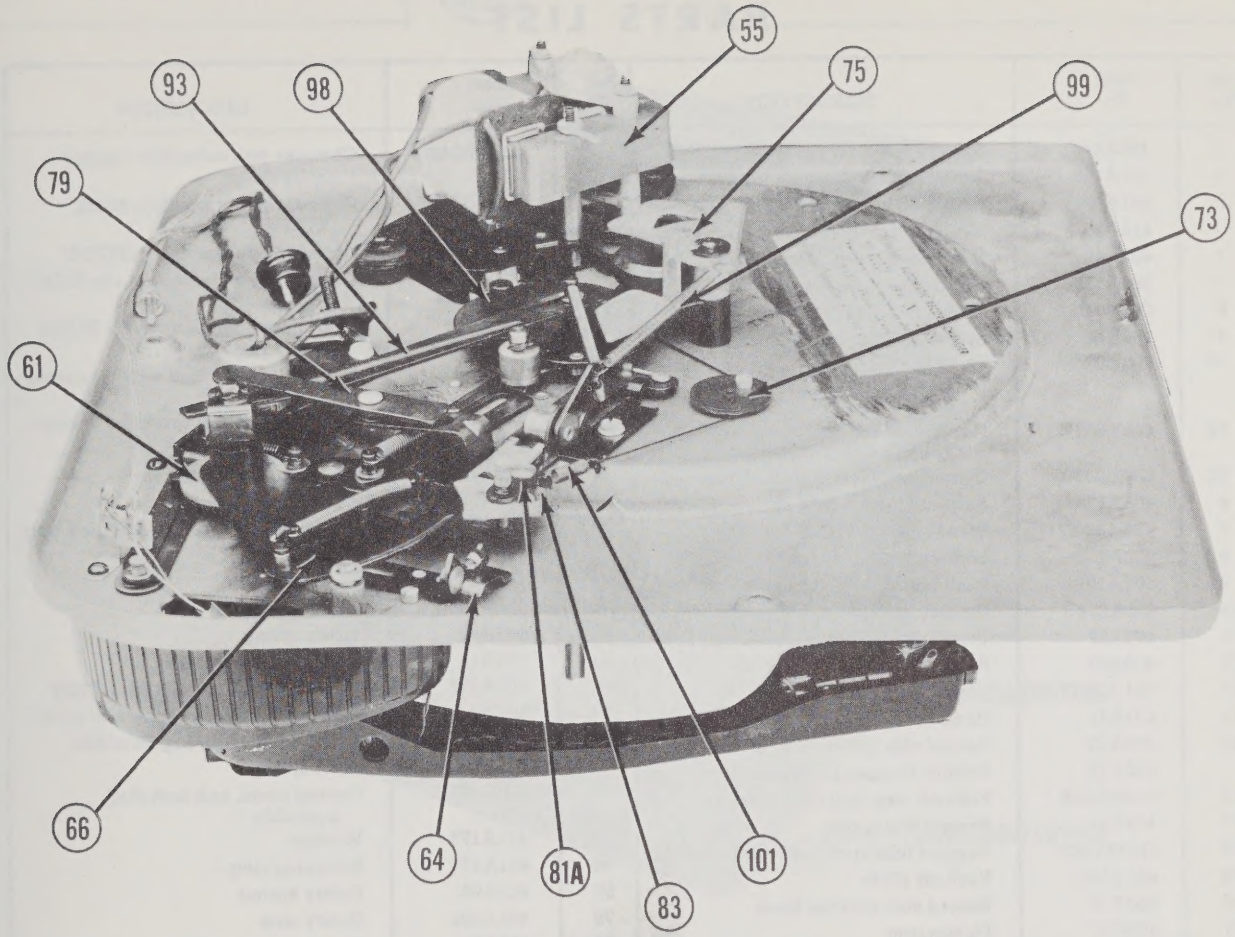

FIGURE 5

3. Check for loose counterweight screw (28) resulting in erratic set-down. *The screws hold the pivot mounting plate (22) in position.*

4. Check to see if the pickup cable is loose enough to give free movement to the pickup arm.

Changer Trips Into the Change Cycle Before Finishing Record (78 and 33 RPM)

1. Check for broken trip cord (100).

2. Cord tension adjusting cam (73) loose or out of adjustment (see "Trip Cord Tension Adjustment").

Changer Fails to Trip on 45 RPM Operation Only

1. Check for broken, or missing, trip cocking spring (83).

2. Trip screw (82) not adjusted properly. Turn screw in to advance tripping.

3. Broken, or bent, position trip incline spring (64).

4. Trip cord cam (73) not adjusted properly (see "Trip Cord Tension Adjustment").

5. Trip cord (100) too short.

Changer Trips Into Change Cycle Before Finishing Record (45 RPM Only)

1. Adjusting screw (82) not adjusted properly. Turn screw out to delay tripping.

45 RPM Records Do Not Drop to the Turntable

1. Push-off adjusting shaft (9B) not adjusted properly.

Turntable Rises During Change Cycle (45 RPM Only)

1. Adjust the push-off adjusting shaft (9B) as described in 45 RPM spindle.

LUBRICATION

Under normal operating conditions, the motor should never require oiling. Also, do *not* use oil on the 45 RPM spindle. The rest of the changer, however, should be lubricated with grease whenever a new part or major adjustment is made. All pivot and friction points should be greased adequately; however, *avoid overlubrication as this may cause sticking of parts, preventing the mechanism from operating properly.* A good automobile chassis grease may be used for this purpose.

Use SAE No. 20 oil on the push-off shaft (16), roller (97), and the oilite bearings used in the turntable hub and base housing.

When lubricating, be very careful not to allow oil or grease to come in contact with the rubber surfaces of the drive wheel (42), or idler wheel (49), and the turntable rim. Carbona or carbon tetrachloride may be used for cleaning these parts. Also, be careful, when using oil, that an excessive amount does not seep into the felt of the turntable.

PARTS LIST

Ref. No.	Part No.	DESCRIPTION
1	403A41	Spindle cap
2	401A276	Top slicer
3	401A275	Bottom slicer
	414A35	Slicer return spring (2 req.)
4	403A40	Record support (2 req.)
5	405A125	Record shelf spring
6	G400A327	Slicer cam and shaft
7	403B39	Spindle base (45 RPM)
7A	G400B329	45 RPM spindle complete (includes items 1, 2, 3, 4, 5, 6, 7, 8, 9, 9A, 9B, 10)
7B	G400B311	Centerpost assembly (for 10" and 12" records)
7C	G400B310	Centerpost assembly (for 7" records)
8	405A124	Push-off shaft return spring
9	4B1-152-47	Washer (flat) .328 x 5/8 x 1/16
9A	402A182	Lock nut
9B	402A181	Push-off adjusting shaft
10	401A235	Retaining ring
11	403A27	On-off reject knob
12	405A97	Reject spring
13	4B1-166-47	Washer (flat) .390 x 5/8 x 1/16
14	403A31	Head cover (plastic)
15	403A32	Record clip (plastic)
	406A18	Rubber bumper for record clip
16	G400A248	Push-off cam and shaft assembly
17	405A94	Record clip spring
18	G400A249	Support tube and shelf assembly
19	401A166	Push-off plate
20	403A37	Record size selector knob
21	403C37	Pickup arm
22	G400A297	Pivot and mounting plate
23	45-500-C2-47	Set-down adjusting screw 4-40 x 1/2 BH MS
24	414A31	Pivot shaft
25	405A118	Set-down adjusting lock spring
26	404A23	Pickup arm counterweight
27	414A23	Size change tension spring
28	1A50-6-47	Screw #4FH S.T. (2 req.)
29	G400A238	Lift plate and rod assembly
30	405A120	Lift adjusting lock spring
31	402A156	Lift adjusting screw
32	G400A294	Pivot spring and hub (includes 8-32 set screw)
33	1A43-14	Allen set screw 8-32
34 & 35	412A32	Washer
36	401A235	Retaining ring
37	403C28	Base housing
38	402A139	Plastiscrew #2 (2 req.)
39	401A264	Cartridge hold-down bracket
40	409A11	Cartridge, includes needles
41	G400A332	Turntable
42	G400A252	Drive wheel (includes tire)
	406A13	Drive wheel tire only
43	412A9	Cork washer 3/64" thick (1 req.)
44	412A1	Cork washer 3/32" thick (2 req.)
45	415111	Thrust bearing washers (2 req.)
46	415111	Thrust bearing (includes stud washers—item 45)
47	405A15	Hairpin clip
48	G400A330	Speed change knob
49	G400A279	Idler wheel assembly
50	412A30	Fiber washers
51	G400D346-1	Changer pan assembly, copper (RC221)
	G400D346-2	Changer pan assembly, black (RC221)
	G400D349	Changer pan assembly (RC222)
	19A10-3	Conical mounting spring (for RC221, RC222)
	402A154	Float (mounting) screw, for RC221 only (3 req.)
	G400A197	mounting screw and washer assembly for RC222
52	406A21	Rubber mounting grommet (3 req.)
53	401A229	Retaining ring
54	412A32	Fiber washers (3 req.)
55	407B17	3 speed motor
56	G400A222	Set-down and size change assembly
57	4B1-68-47	Washer
58	401A177	Retaining ring
59	405A93	Set-down spring
60	405A92	Index spring
61	404A17	Size change eccentric
62	402A148	Screw #6 P.K. special 3/8 OFHST
63	G400A340	Arm control lever, studs, and pawl
64		Position trip incline (part of 63)
65	405A89	Pawl spring
66	G400A226	Control plate, hub and stud assembly
67	401A173	Washer
68	401A177	Retaining ring
69	405A90	Safety spring
70	401A202	Safety arm
71	405A91	Control plate spring
72	G400A224	Pivot link and stud
73	412A34	Cord tension adjusting cam
74	402A148	Screw #6 P.K. special 3/8 OFHST
75	G400A336	Riser plate and hub
76	401A229	Retaining ring
77		Push-off arm (part of item 93)
78	401A229	Retaining ring
79	401A237	Reject arm
80	G400A230-1	Reject arm support and trip lever
81	G400A333	Trip serration plate
82	402A186	Position trip adjusting screw
83	405A126	Position trip cocking spring
84	65-500-C2-47	Trip adjusting screw
85	G400A22B	Trip bracket and stud assembly
86	1A53-9-47	Screw, switch and trip bracket mounting
87	405A88	Trip cocking spring
88	405A87	Riser plate return spring
89	1A53-9-47	Screw
90	401A177	Retaining ring
91	4B1-68-47	Washer
92	401A223	Switch bracket
93	G400A219	Push-off arm and link assembly
94	85-375-C2-47	Control cam screw 8-32 x 3/8 BH MS
95	401A145	Control cam washer
	3B1-26-47	Lock washer #8 I.T.
96	401A229	Retaining ring
97	415A9	Powered iron roller
98	G400A342	Control cam assembly
99	405A87	Cycle spring
100		Position trip cord
101	405A127	Cord tension spring

ADMIRAL CHASSIS 5W1

ADMIRAL CHASSIS 5W1

ADMIRAL MODEL 5W12

TRADE NAME	Admiral, Models 5W11, 5W12 (Chassis 5W1)
MANUFACTURER	Admiral Corp., 3800 W. Courtland St., Chicago 47, Ill.
TYPE SET	AC Operated Combination Phono-Radio Superhetrodyne Receiver with Loop Antenna.
TUBES (FIVE)	Types 12BE6 Converter, 12BA6 IF Amp., 12AV6 Det.-AVC-AF, 50C5 Power Output, 35W4 Rectifier.
POWER SUPPLY	110 - 120 Volts AC RATING .26 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	550 - 1620 KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer, if available. If not, connect a .1Mfd. capacitor in series with the low side of the signal generator and B-.

Loop should be maintained in the same relative position to the chassis as when receiver is in cabinet.

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	250 MMF	High side to stator of rear section of tuning gang. Low side to B-.	455KC (400~ Mod.)	Tuning Gang Fully Open.	Across Voice Coil.	A1, A2 A3, A4	Adjust for maximum output.
2.	250 MMF	"	1620KC (400~ Mod.)	"	"	A5	Adjust for maximum output.
3.		Loop	1400KC (400~ Mod.)	Tune for max. signal.	"	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output. Set the pointer parallel with top of chassis with tuning set at 1400KC.

HOWARD W. SAMS & CO., INC. • Indianapolis 7, Indiana

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		ADMIRAL PART No.	STANDARD REPLACEMENT		
V1	Converter	12BE6	12BE6	7CH	
V2	IF Amp.	12BA6	12BA6	7BK	
V3	Det.-AVC-AF	12AV6	12AV6	7BT	
V4	Power Output	50C5	50C5	7CV	
V5	Rectifier	35W4	35W4	5BQ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA					IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	ADMIRAL PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	
C1A	70	150	65A17	PRSA150/80-	EDL8415		TA-830	Filter - Red
B	30	150		40				Filter - Yellow
C2	50		65B6-4	1468-00005	5W5Q5	GP1K-50	1FM-45	Oscillator Grid Cap.
C3	.1	200	64B1-30	P288-1	GT2P1		TM-1	AVC Filter
C4A	220		63A8	1468-00025	5W5T25	GP2K-220	3403	Diode RF Filter
B	2000			P688-002	GT6D2	GP2K-002		Audio Coupling
C	220			1468-00025	5W5T25	GP2K-220		AF Plate Bypass
D	5000			P688-005	GT6D5	GP2M-005		Audio Coupling
C5	.03	400	64B1-23	P488-03	GT4S3		TM-13	Output Plate Bypass
C6	.1	200	64B1-30	P288-1	GT2P1		TM-1	Phono Isolation
C7	.18	200	64A2-2	P488-22	GT4P2		72P53	Line Isolation
C8	.05	400	64B1-22	P488-05	GT4S5		TM-15	Line Filter

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA			INSTALLATION NOTES
	RESISTANCE	WATTS	ADMIRAL PART No.	IRC PART No.	CLAROSTAT PART No.	
R1A	1 Meg.	½	75B1-34	Q13-137	AM-63-2	Volume Control
B	Shaft		Not Req.	Not Req.	KSS-3	Attach to R1A per instructions.
C	Switch		Not Req.	76-1	SW-A	Attach to R1A per instructions.

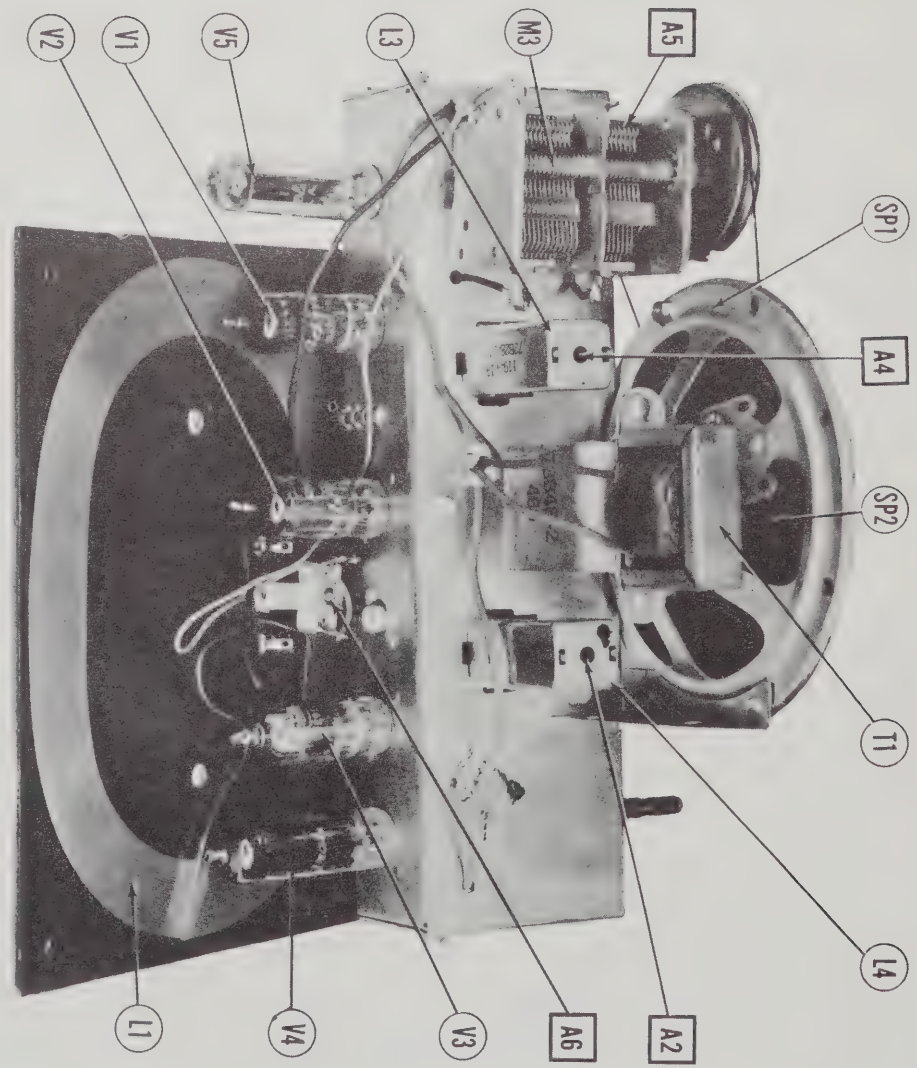
RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	ADMIRAL PART No.	IRC PART No.	
R2	22KΩ	½	60B8-223	BTS-22K	Oscillator Grid
R3	1 Meg.	½	60B8-105	BTS-1 Meg.	AVC Network
R4	100Ω	½	60B8-101	BW-½-100	IF Cathode
R5	4.7 Meg.	½	60B8-475	BTS-4.7 Meg.	AF Grid
R6	470KΩ	½	60B8-474	BTS-470K	AF Plate
R7	470KΩ	½	60B8-474	BTS-470K	Output Grid
R8	150Ω	½	60B8-151	BW-½-150	Output Cathode
R9	1000Ω	1	60B28-2	BW-1-1000	Filter
R10	33Ω	1	60B83-3		Surge Limiter

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		ADMIRAL PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T1	2100Ω	3.4Ω	172Ω	.9Ω	98A4	A-3876	A-2923	RC-2	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			ADMIRAL PART No.	JENSEN PART No.	QUAM PART No.	
	FIELD	V.C. IMP.		ST-105 †		
SP1	PM	3.4Ω	78B48-2	Mod. P8-X	5A07 †	† Remount output transformer.
	CONE DIA.	V.C. DIA.				
SP2	4 3/4"	9/15"				

R F COILS

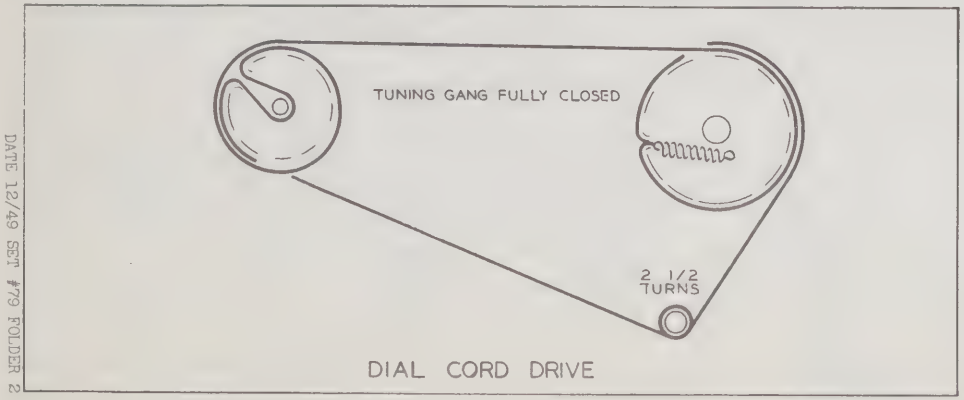
ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	ADMIRAL PART No.	MEISSNER PART No.	
L1	Loop Ant.	1.5Ω		69B98		
L2	Osc. Coil	6Ω		69A52-1	14-1060	
L3	Input IF	21Ω	21Ω	72B28-17	16-6678	
L4	Output IF	21Ω	21Ω	72B28-17	16-6678	

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA		REMARKS
	ADMIRAL PART No.	ASTATIC PART No.	
M1	409A300	AC-J or CQ-J	

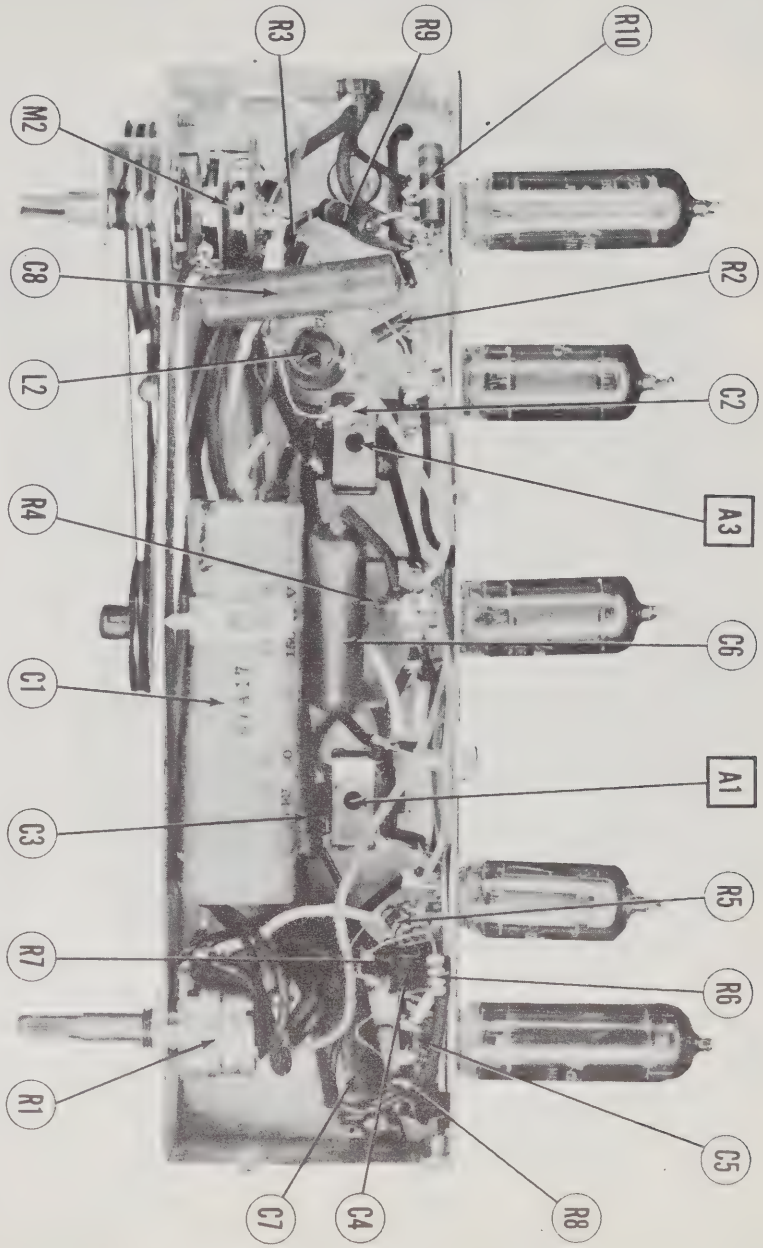
MISCELLANEOUS

ITEM No.	PART NAME	ADMIRAL PART No.	NOTES
M2	Switch	77A23	Radio-Phono
M3	2 Gang Var. Cap.	68A30	(13 - 460 MMF, 20 - 125 MMF)
	Dial Pointer	25A35-1	

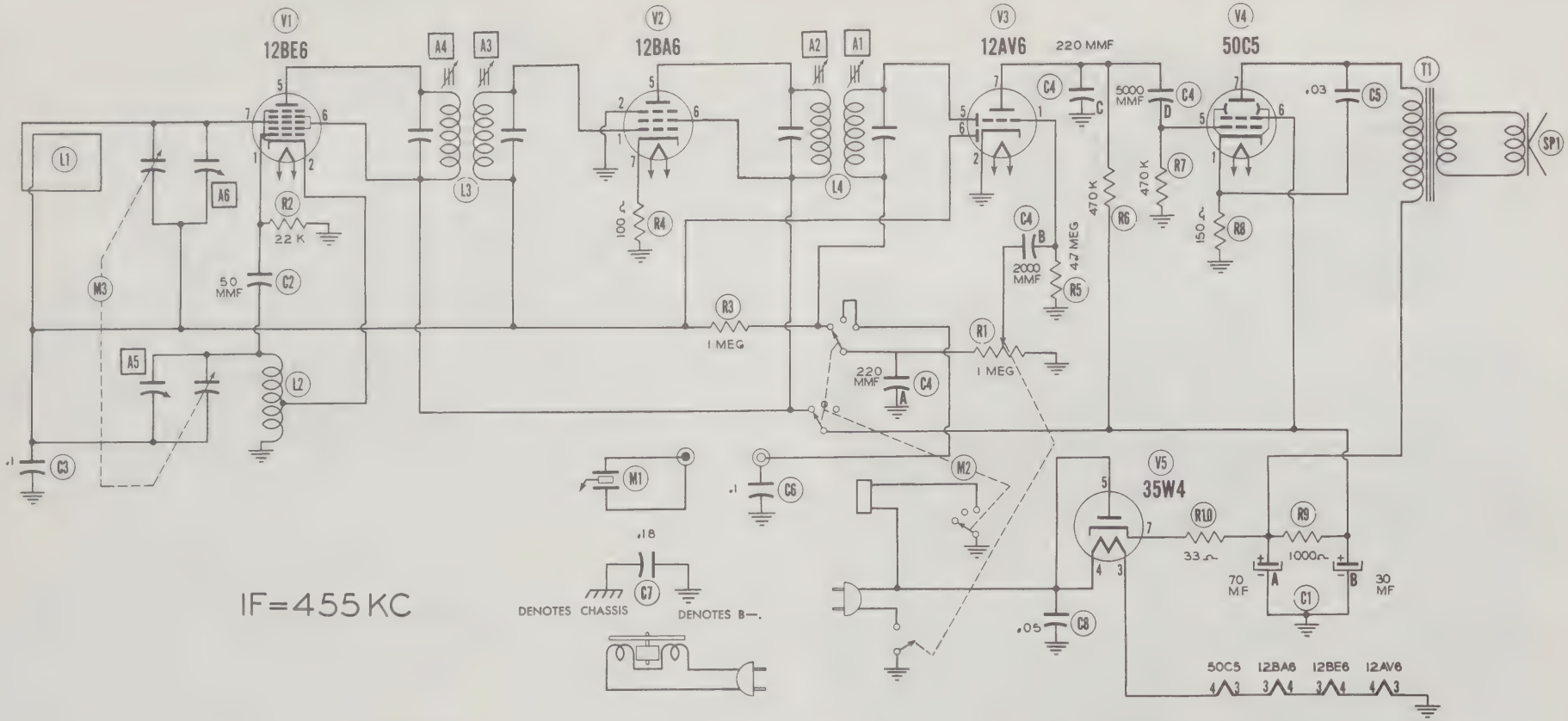


DIAL CORD DRIVE

CHASSIS—BOTTOM VIEW



DATE 12/49 SET #79 FOLDER 2
ADMIRAL MODEL 5W12
ADMIRAL MODEL 5W12



VOLTAGE READINGS

RADIO-PHONO SWITCH IN RADIO POSITION.

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	12BE6	§-8VDC	0V	25VAC	12VAC	100VDC	100VDC	-.7VDC
V 2	12BA6	-.7VDC	0V	38VAC	25VAC	100VDC	100VDC	.9VDC
V 3	12AU6	-.5VDC	0V	0V	12VAC	-.8VDC	-.7VDC	42VDC
V 4	50C5	6.7VDC	0V	38VAC	85VAC	0V	100VDC	116VDC
V 5	35W4	122VDC	122VDC	85VAC	117VAC	117VAC	110VAC	125VDC

§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	12BE6	22KΩ	1Ω	24Ω	12Ω	†1000Ω	†1000Ω	2 Meg.
V 2	12BA6	2 Meg.	0Ω	36Ω	24Ω	†1000Ω	†1000Ω	100Ω
V 3	12AU6	4.7Meg.	0Ω	0Ω	12Ω	1 Meg.	2 Meg.	†470KΩ
V 4	50C5	150Ω	470KΩ	36Ω	85Ω	470KΩ	†1000Ω	†210Ω
V 5	35W4	130KΩ	130KΩ	85Ω	120Ω	120Ω	110Ω	130KΩ

† Measured from pin 7 of V5.

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1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

CORONADO
MODEL 94RA31-43-9841A
(BATTERY-LINE OPERATED)

CORONADO
MODEL 94RA31-43-9841A
(BATTERY-LINE OPERATED)

CORONADO
MODEL 94RA31-43-9841A
(BATTERY-LINE OPERATED)

CORONADO MODEL 94RA31-43-9841A

TRADE NAME	Coronado, Model 94RA31-43-9841A
MANUFACTURER	Gamble-Skogmo Inc., 15 N. 8th St., Minneapolis, Minnesota
TYPE SET	Three Power Operated Portable Superheterodyne Receiver with Loop Antenna
TUBES (FIVE)	Types 1R5 Converter, 1U4 IF Amp., 1U5 DET-AVC-AF, 3S4 Power Output, 117Z3 Rectifier
POWER SUPPLY RATING:	105-125 Volts AC-DC or 4.5 Volts "A" Supply and 67.5 Volts "B" Supply .16 Amp. @ 117 Volts AC or 94MA @ 4.5 Volts DC and 7MA @ 67.5 Volts DC
TUNING RANGE—BROADCAST	535-1620KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set dial pointer, turn the tuning gang fully closed and set the pointer to the last calibration indent mark at the low frequency end of the dial backplate. The calibration marks reading from left to right are as follows: Extreme left hand limit, 600KC, 1000KC, 1400KC and 1620KC.

Use battery power when available. If AC power is used, use an isolation transformer when available. If not, connect a .1MFD capacitor in series with low side of the signal generator and B-.

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to pin 6 (Grid) of 1R5 (V1). Low side to B-.	455KC (400~ Mod.)	Tuning gang fully open	Across voice coil	A1,A2, A3,A4	Adjust for maximum output. If AC power is used without an isolation transformer reduce dummy antenna to 200MMF to reduce hum modulation.
2.	.1MFD	"	1620KC (400~ Mod.)	"	"	A5	Adjust for maximum output.
3.		Loop	1400KC (400~ Mod.)	1400KC	"	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.

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PARTS LIST AND DESCRIPTIONS

CORONADO
MODEL 94RA31-43-9841A

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		CORONADO PART No.	STANDARD REPLACEMENT		
V1	Converter	1R5	1R5	7AT	
V2	IF Amp.	1U4	1U4	6AR	
V3	DET.-AVC-AF	1U5	1U5	6BW	
V4	Power Output	3S4	3S4	7BA	
V5	Rectifier	117Z3	117Z3	4CB	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA					IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	CORONADO PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	
C1A	40	150	CE-17	PRS150/40-40	EDL4415		TA-440	Filter Green
B	40	150		PRS12/250	BRH1225		UHC-212	Filter Red
C	200	10						Filament Bypass Yellow
C2	47	500	CM-470-1	1468-00005	5W5Q5	GP1K-47	1FM-45	Osc. Grid Cap.
C3	.05	400	CP-503-1	P488-05	GT4S5		TM-15	AVC Filter
C4	.01	400	CP-103-7	P488-01	GT4S1	GP2-335-01	TM-11	Osc. Anode Decoupling
C5	.05	200	CP-503-2	P288-05	GT2S5		68P16	Filament Bypass
C6	.1	400		P488-1	GT4P1		72P52	Line Isolation
C7	.05	200	CP-503-2	P288-05	GT2S5		68P16	Filament Bypass
C8	.01	400	CP-103-7	P488-01	GT4S1	GP2-335-01	68P8	IF Grid Filter
C9	.001	400	CP-102-3	P485-001	ZYW6D1	GP2L-001	68P1	Audio Coupling
C10A	100		CC-5-2	1468-0001	5W5T1	GP1K-100	1FM-31	Diode RF Filter
B	10000			P485-01	ZNW4S1	821-01	68P8	AF Screen Bypass
C	100			1468-0001	5W5T1	GP1K-100	1FM-31	AF Plate Bypass
D	2000			P485-002	ZYW4D2	GP2M-002	68P27	Audio Coupling
C11	.005	600	CP-502-2	P688-005	GT6D5	GP2M-005	TM-25	Output Plate Bypass
C12	.05	400	CP-503-1	P488-05	GT4S5		TM-15	Rect. Plate Bypass

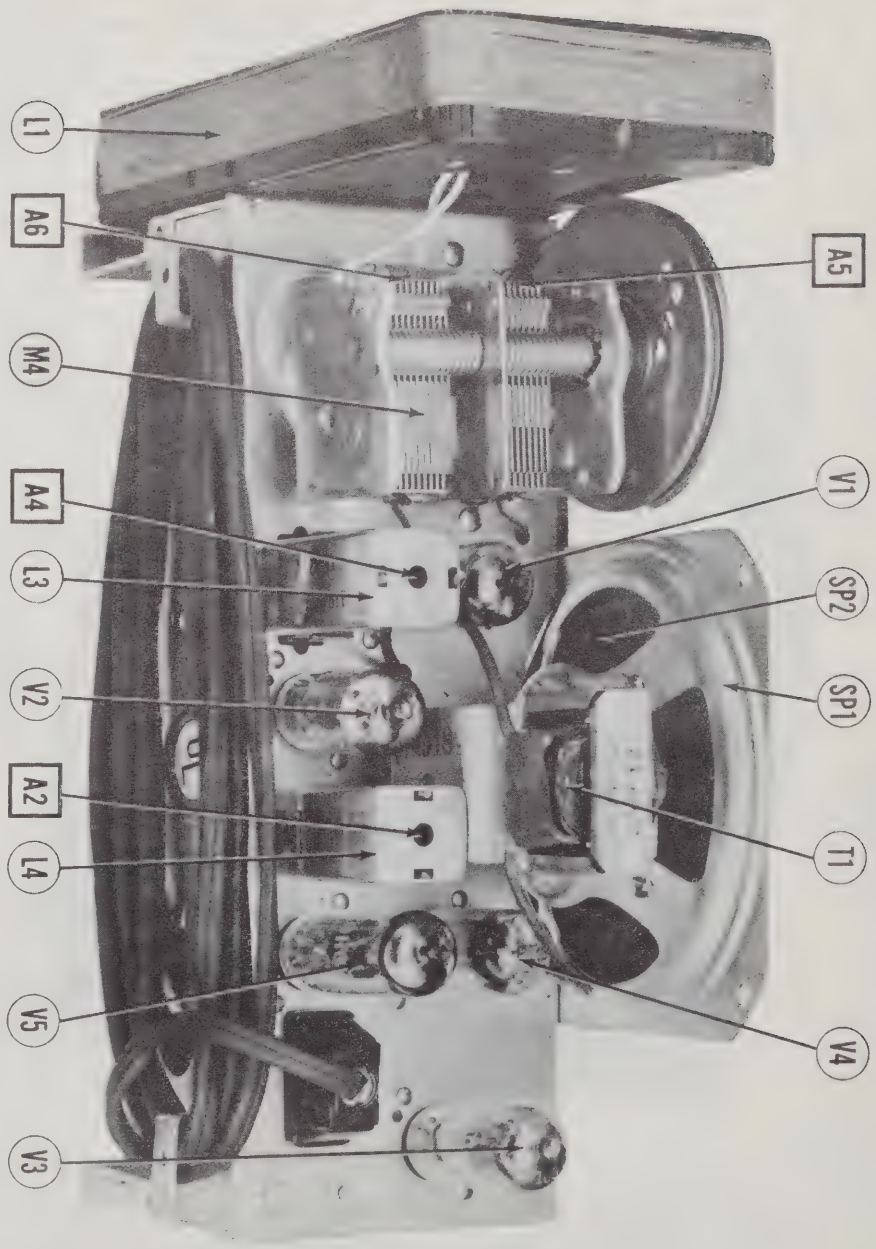
CONTROLS

ITEM No.	RATING		REPLACEMENT DATA			INSTALLATION NOTES
	RESISTANCE	WATTS	CORONADO PART No.	IRC PART No.	CLAROSTAT PART No.	
R1A	1 Meg.	½	VC-16	Q13-137		Volume control
B	Switch			76-2		Attach to R1A per instructions

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	CORONADO PART No.	IRC PART No.	
R2	100KΩ	½	RC-104-1	BTS-100K	Osc. Grid
R3	15KΩ	½	RC-153-1	BTS-15K	Osc. Anode Decoupling
R4	10 Meg.	½	RC-106-1	BTS-10 Meg.	IF Grid
R5	2200Ω	½	RC-222-2	BTS-2200	Filament String
R6	3.3 Meg.	½	RC-335-1	BTS-3.3 Meg.	AVC Network
R7	10 Meg.	½	RC-106-1	BTS-10 Meg.	AF Grid
R8	3.3 Meg.	½	RC-335-1	BTS-3.3 Meg.	AF Screen
R9	1 Meg.	½	RC-105-1	BTS-1 Meg.	AF Plate
R10	2.2 Meg.	½	RC-225-1	BTS-2.2 Meg.	Output Grid
R11	680Ω	½	RC-681-2	BTS-680	Bias Network
R12	1500Ω	½	RC-152-2	BTS-1500	Filament String
R13	390Ω	½	RC-391-2	BW-½-390	Filament String
R14	27Ω 5%	½	RC-270-3	BW-½-27-5%	Filament String
R15	39Ω	½	RC-390-2	BW-½-39	Filament String
R16	2550Ω	10	RP-5		Filament Dropping (Wire Wound)
R17	6200Ω	1	RC-622-5	BW-1-6200	Filter
R18	18Ω	½	RC-180-1		Rect. Ballast

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		CORONADO PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T1	6.3KΩ	3.7Ω	340Ω	.4Ω	Part of SP-41-18	A-3329 ‡	A-2931 ‡	RO-11 ‡	‡ Bend mounting tabs down and mount on original bracket.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			CORONADO PART No.	JENSEN PART No.	QUAM PART No.	
	FIELD	V. C. IMP.		ST-113 †		
SP1	PM	3.7Ω	SP-41-18	MOD.P4-X	4A07 †	† Remount output transformer.
	CONE DIA.	V. C. DIA.				
SP2	3 7/8"	9/16"				

R F COILS

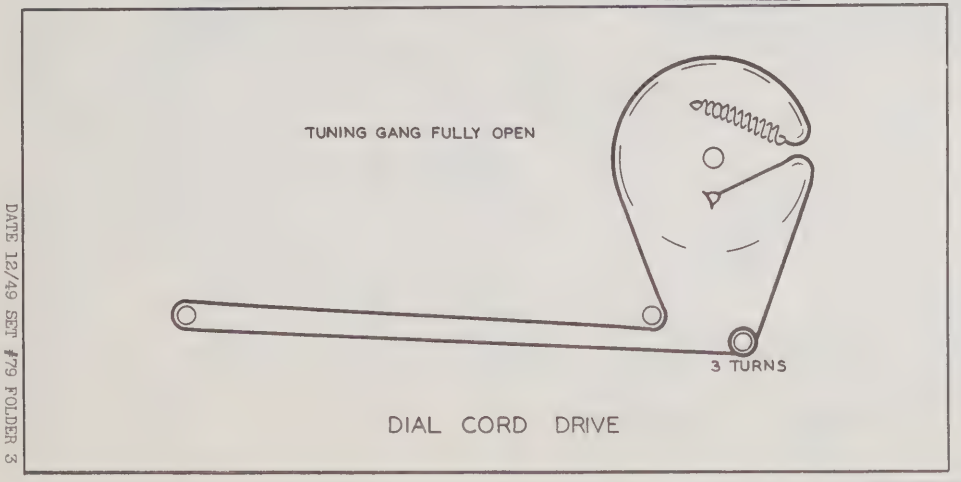
ITEM No.	USE	DC RES.		REPLACEMENT DATA	
		PRI.	SEC.	CORONADO PART No.	MEISSNER PART No.
L1	AM Loop Ant.	3.5Ω		LP-11	
L2	Osc. Coil	1.5Ω	7Ω	LC-8	14-1060
L3	Input IF	24Ω	24Ω	LF-22	16-6668
L4	Output IF	24Ω	24Ω	LF-22	16-6669

BATTERIES

ITEM No.	VOLTAGE	CORONADO PART No.	REPLACEMENT DATA						INSTALLATION NOTES
			EVEREADY			BURGESS			
			"A"	"B"	"A-B"	"A"	"B"	"A-B"	
M1	4.5V"A"	42-266	746			G3			
M2	67.5V"B"	42-304		467			XX45		

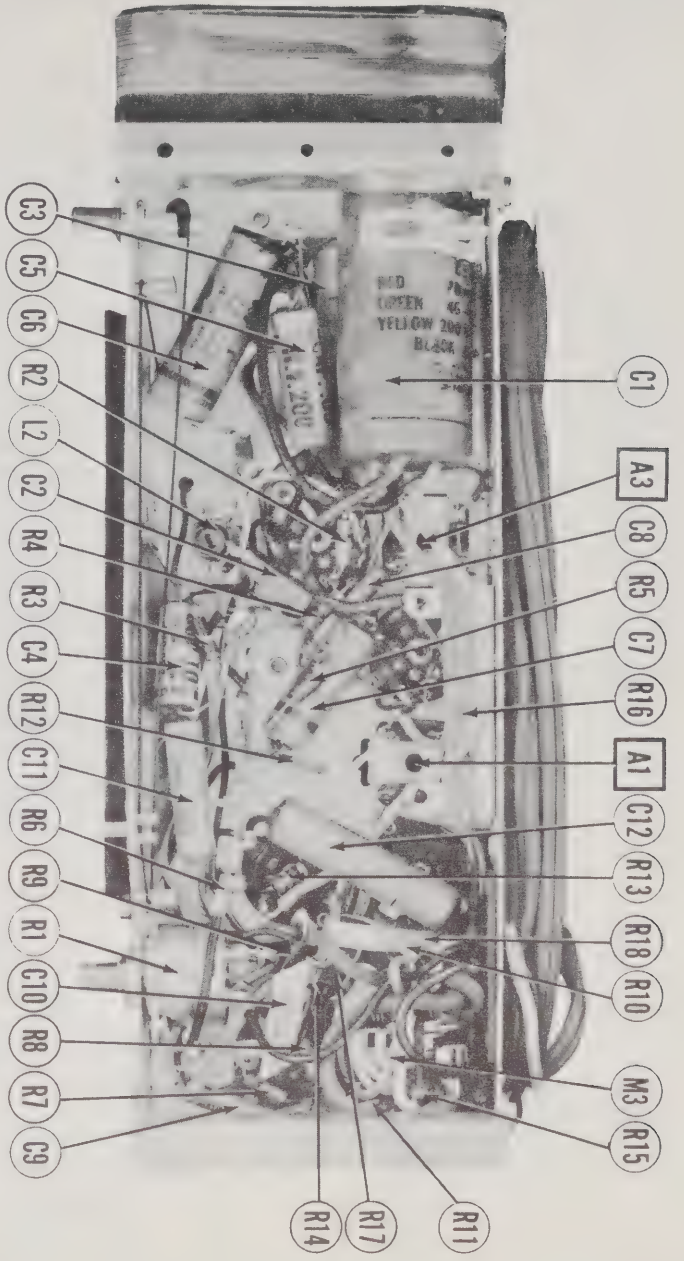
MISCELLANEOUS

ITEM No.	PART NAME	CORONADO PART No.	NOTES
M3	Switch	SW-11	AC/DC-Battery
M4	2 Gang Var.Cap.	CV-15	(38-392MMF, 31-175MMF)
	Dial Pointer	PN-16	
	Knob	KN-29	
	Cabinet	CB-112	



DIAL CORD DRIVE

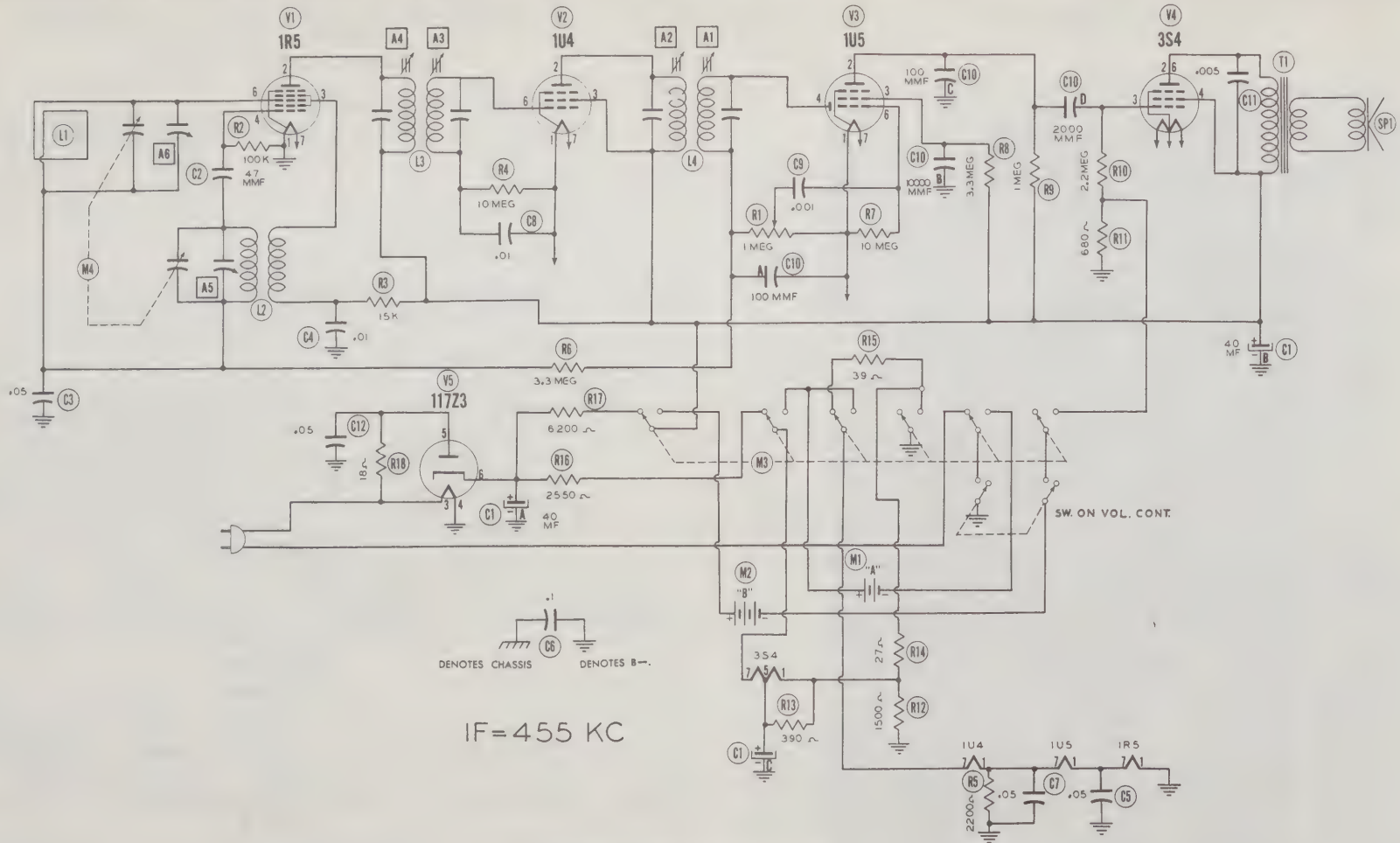
CHASSIS—BOTTOM VIEW



DATE 12/49 SET #79 FOLDER 3

CORONADO
MODEL 94RA31-43-9841A

CORONADO
MODEL 94RA31-43-9841A



VOLTAGE AND RESISTANCE READINGS TAKEN IN AC-DC POSITION.

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	1R5	0V	65VDC	43VDC	5-6.7VAC	0V	0V	1.3VDC
V 2	1U4	2.4VDC	65VDC	64VDC	0	2.4VDC	1VDC	2.4VDC
V 3	1U5	1.2VDC	24VDC	16VDC	2.5VDC	0V	1V	2.4VDC
V 4	3S4	2.5VDC	65VDC	0	36VDC	2.4VDC	2.5VDC	2.5VDC
V 5	117Z3	0	0	117VAC	0V	116VAC	125VDC	0V

§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	1R5	*	†6.2KΩ	†21KΩ	1.0KΩ	*	4.3Meg.	*
V 2	1U4	*	†6.2KΩ	†6.2KΩ	Inf.	*	10 Meg.	*
V 3	1U5	*	†1 Meg.	†2.3Meg.	1 Meg.	Inf.	10 Meg.	*
V 4	3S4	*	†6.5KΩ	2.2Meg.	10.2KΩ	*	10.2KΩ	*
V 5	117Z3	480Ω	Inf.	460Ω	0Ω	480Ω	2.5KΩ	Inf.

*DO NOT USE OHMMETER TO MEASURE FILAMENT RESISTANCE.
† Measured from pin 6 of V5

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A PHOTOFACT STANDARD NOTATION SCHEMATIC

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1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

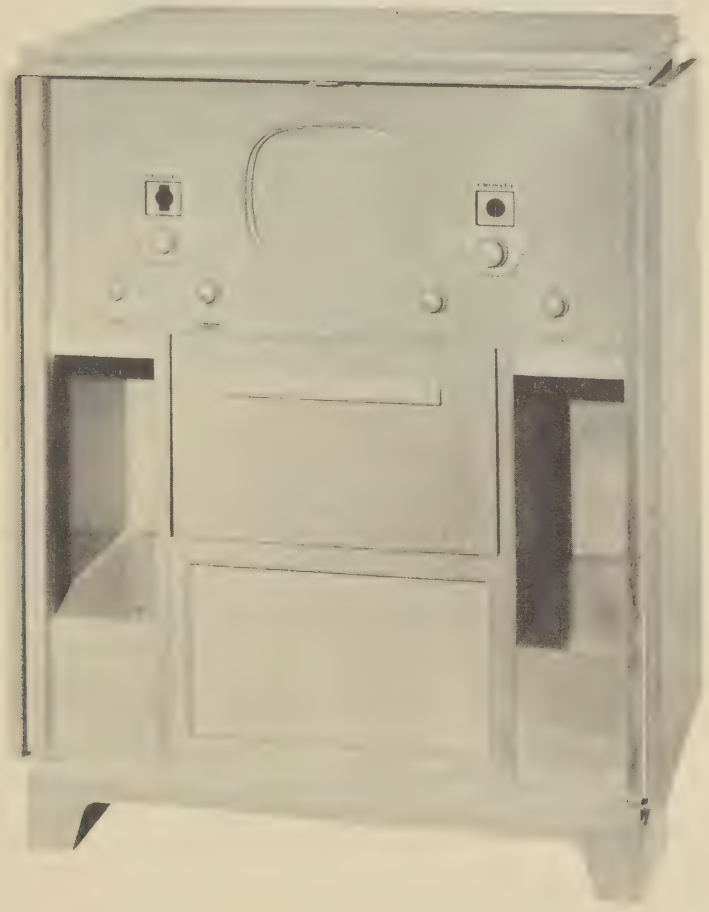
PHOTOFACT* Folder

CROSLEY MODELS
9-403M, 9-403M-2, 9-404M, 9-413B, 9-413B-2, 9-414B, 9-420M, 9-424B

IMPORTANT FILING NOTICE

The contents for this envelope will be found among the last folders in this complete set of folders . . . *unless* it has been purchased as part of a *complete* volume of PHOTOFACTS assembled in a DeLuxe Binder.

Merely insert the corresponding folder on this model in this envelope to retain proper filing and indexing order.



CROSLEY MODELS
9-403M, 9-403M-2, 9-404M, 9-413B,
9-413B-2, 9-414B, 9-420M, 9-424B

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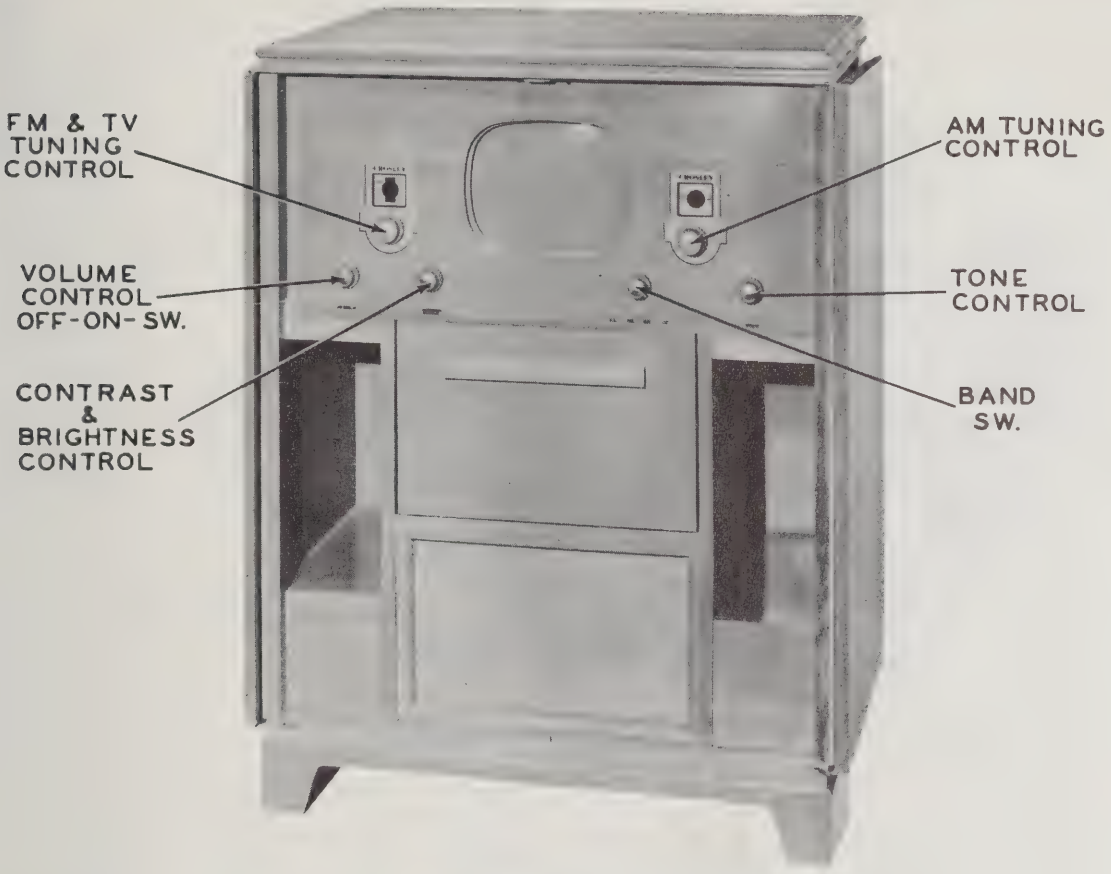
Date 12/49 Set No. 79—Folder No. 4

PHOTOFACT* Folder
*TRADE MARK

CROSLEY MODELS
9-403M, 9-403M-2, 9-404M, 9-413B, 9-413B-2, 9-414B, 9-420M, 9-424B



CROSLEY MODEL 9-414B

TRADE NAME	Crosley, Models 9-403M, 9-403M-2, 9-404M, 9-413B, 9-413B-2, 9-414B, 9-420M, 9-424B
MANUFACTURER	Crosley Div., Aveo Manufacturing Corp., Cincinnati 25, Ohio
TYPE SET	AM-FM-TV Receiver
TUBES	Twenty One (TV-FM only models) Twenty Four (TV-FM-AM models)
POWER SUPPLY	117 Volts-60 Cycle
TUNING RANGE	AM 540-1600KC, FM-TV 44-216MC (continuous tuning)
RATING	2 Amp. @ 117 Volts AC (TV), 1.5 Amp. @ 117 Volts AC (FM-AM)

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CROSLEY MODELS
9-403M, 9-403M-2, 9-404M, 9-413B, 9-413B-2, 9-414B, 9-420M, 9-424B

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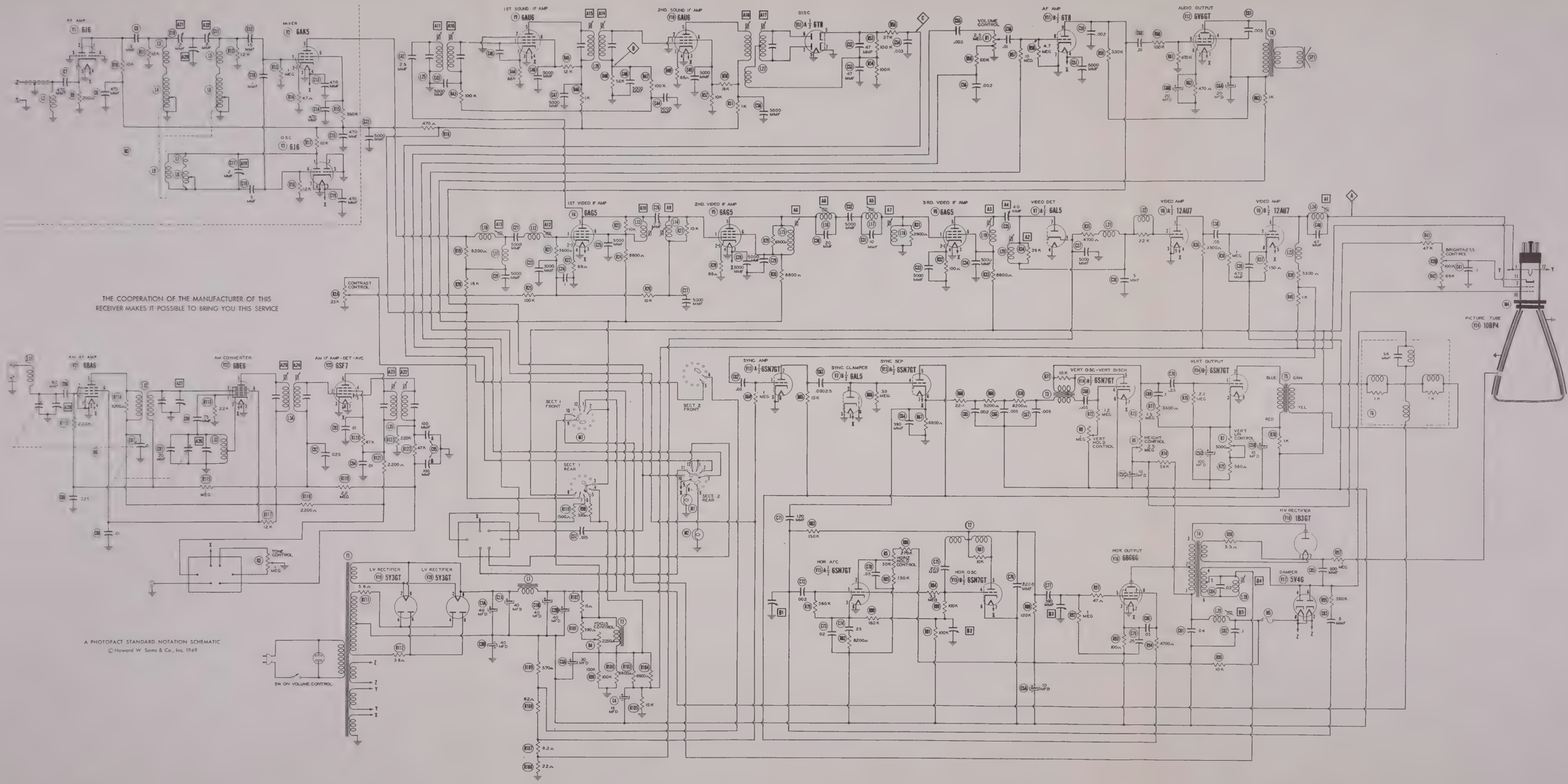
DATE 12/49 SET # 79 FOLDER # 4



THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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CROSLEY MODELS
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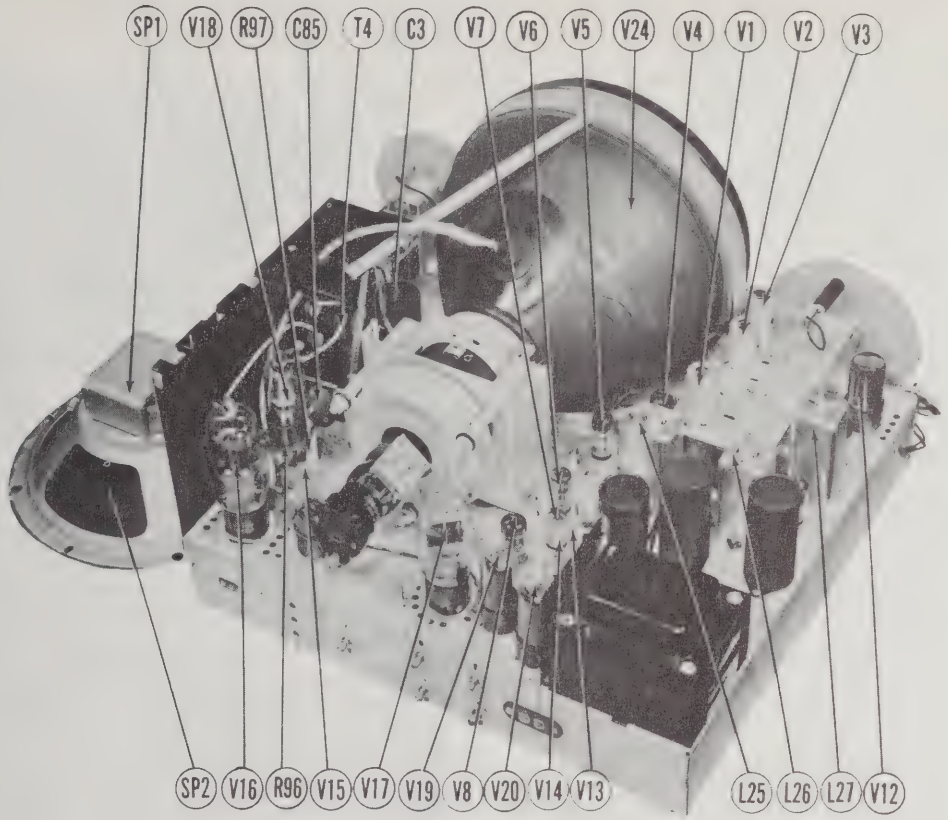
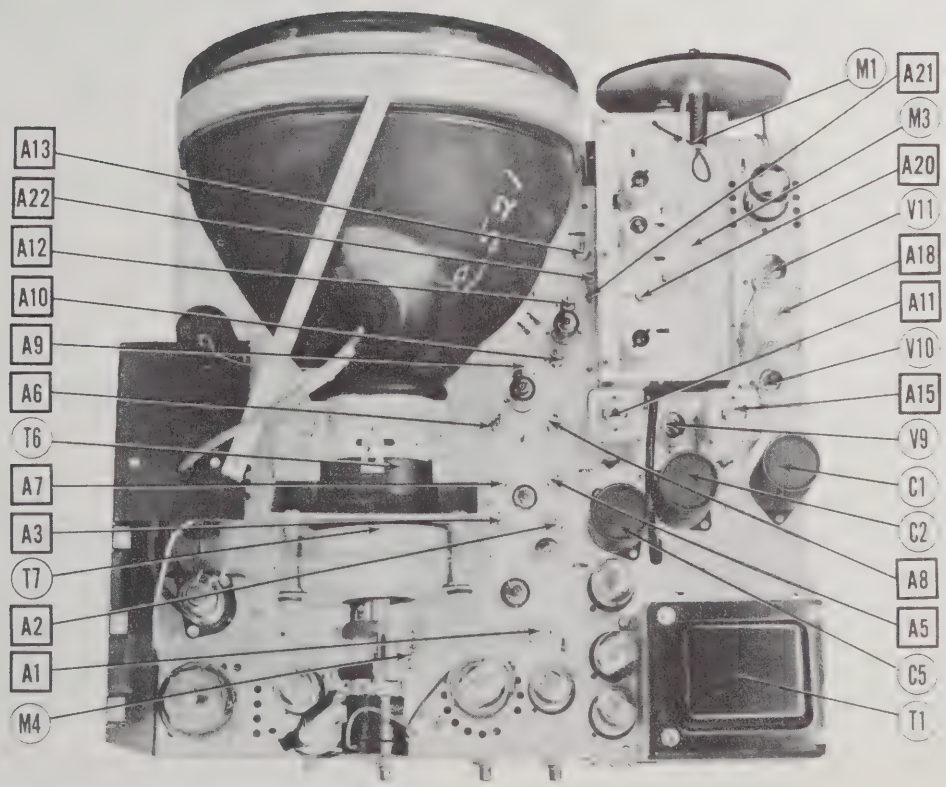
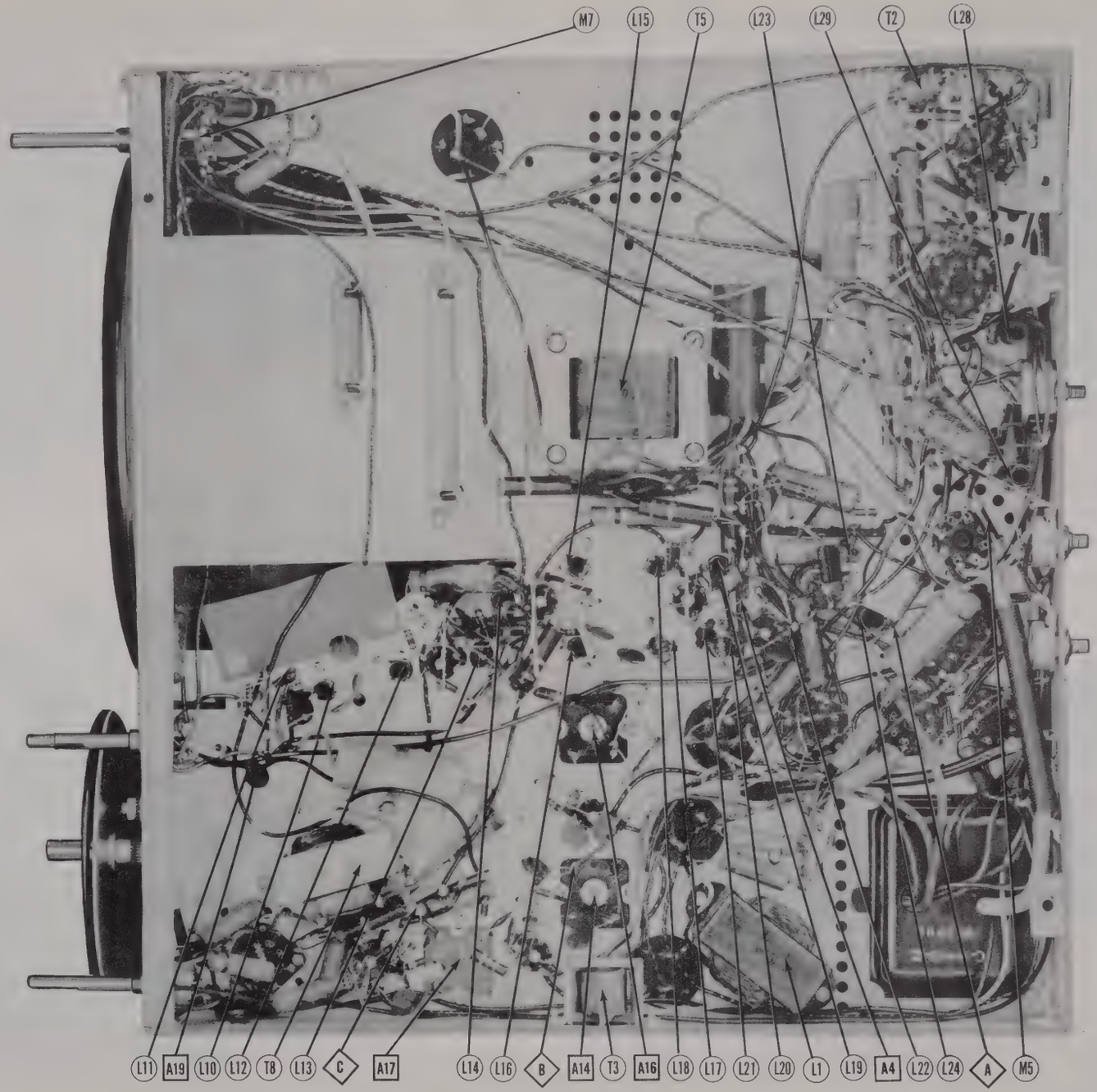
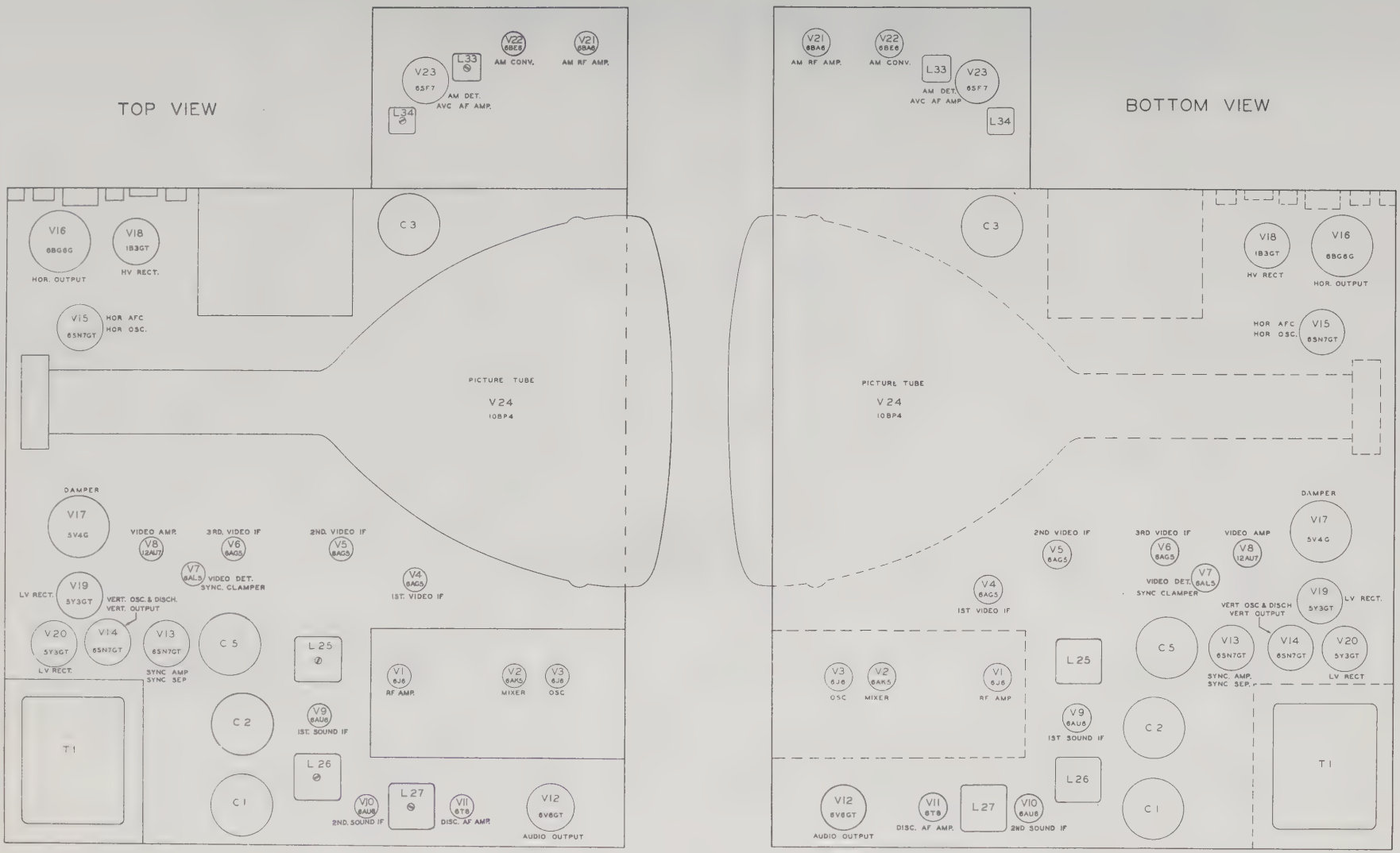




CHASSIS TOP VIEW



CHASSIS BOTTOM VIEW-TRANS., INDUCTOR AND ALIGNMENT IDENTIFICATION



TUBE PLACEMENT CHART

CROSLEY MODELS
9-403M, 9-403M-2, 9-404M, 9-413B, 9-413B-2, 9-414B, 9-420M, 9-424B

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

If set is to be aligned with the picture tube removed, remove the horizontal oscillator tube V15 to remove high voltage shock hazard.

Remove the vertical oscillator tube V14 to prevent erratic indications.

During Video and Sound IF Alignment remove the local oscillator tube V3 to prevent erroneous indications.

VIDEO IF ALIGNMENT

Set the selector switch to TV (maximum clockwise).

During video IF alignment keep contrast control low enough to prevent overloading. This will be noted by a change in the response curve as contrast control is turned clockwise.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	.05MFD	High side to pin 1 (Grid) of 6AG5 (V6). Low side to chassis.	4.5MC (400∿ Mod.)		Any	Vert. Amp. thru crystal probe (Fig 7) to Point (A) Low side to chassis.	A1	Adjust for MINIMUM 400∿ response on scope.
2.	.05MFD	High side to pin 1 (Grid) of 6AG5 (V6). Low side to chassis.	24MC (10MC Sweep)	22.9MC 26.4MC	"	Vert. Amp. to Point (A) Low side to chassis.	A2,A3 A4	Adjust for response curve as per Fig 1. Adjust band pass by adjusting spacing of wires on gimmick A4.
3.	.05MFD	High side to pin 1 (Grid) of 6AG5 (V5). Low side to chassis.	"	21.9MC 22.9MC 26.4MC 27.9MC	"	"	A5,A6, A7,A8	Adjust for response as per Fig 2. A7 and A8 are 21.9MC and 27.9MC traps respectively and should be adjusted for MINIMUM response at the points shown on Fig 2. Turn marker output to MAXIMUM for these adjustments.
4.	.05MFD	High side to pin 1 (Grid) of 6AG5 (V4). Low side to chassis.	"	21.9MC 22.9MC 26.4MC	"	"	A9,A10, A11	Adjust for response per Fig 2. Adjust A11 for minimum response at 21.9MC. Obtain straightest slope on 26.4MC side of curve.
5.	.05MFD	High side to pin 6 of oscillator tube (V3) socket. Low side to chassis. Use a piece of stiff wire inserted in pin 6 hole of oscillator tube socket.	"	21.9MC 22.9MC 26.4MC 27.9MC	"	"	A12, A13	Adjust for response as per Fig 2. Obtain straightest slope on 26.4MC side of response curve. If necessary, slightly retouch all IF adjustments for optimum results.

SOUND IF ALIGNMENT

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
6.	.05MFD	High side to pin 1 (Grid) of 6AU6 (V9) Low side to chassis.	21.9MC (450KC Sweep)	21.9MC	Any	Vert. Amp. to Point (B) Low side to chassis.	A14, A15	Adjust for maximum amplitude and symmetry as per Fig 3.
7.	.05MFD	High side to pin 1 (Grid) of 6AG5 (V5). Low side to chassis.	"	"	"	"	A16	"
8.	.05MFD	"	"	"	"	Vert. Amp. to Point (C) Low side to chassis.	A17, A18	Adjust A17 so 21.9MC marker occurs at center of crossover lines as per Fig 4. Adjust A18 for maximum amplitude and straightness of crossover lines.

TUNER ALIGNMENT

The tuner adjustments are pre-set at the factory and are normally very stable. The adjustments are critical and should not be attempted unless tuner is definitely known to be out of alignment.

If tuner has been tampered with and is badly out of alignment, replacement of entire tuner is recommended.

OSCILLATOR ALIGNMENT

Check the dial setting on the shaft. With the dial in the maximum clockwise position the No. 13 and the small mark above the window on the back dial plate, should be centered on the vertical centerline of the tuning shaft.

The sound IF channel must be properly aligned before attempting oscillator alignment.

The coil L7 is located behind capacitor A19 and is accessible thru the same hole. Use care when adjusting L7 so not to change it too much, and not to disturb anything else in the tuner.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
9.	Two 125Ω carbon res.	Across antenna terminals with 125Ω in each lead.	71.75MC (Unmod.)	4	DC Probe to Point (C) Common to chassis.	A19	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.
10.	"	"	215.75MC (Unmod.)	13	"	L7	SLIGHTLY expand or compress coil turns for zero reading as in step 9. This coil is accessible thru the hole in the bottom of the tuner. Use a thin insulated tool.
11.	"	"	209.75MC	12	"		Check all other channels to see that zero reading is obtained at the correct setting when the sound carrier signal is being fed into receivers.
			203.75MC	11			
			197.75MC	10			
			191.75MC	9			
			185.75MC	8			
			179.75MC	7			
			87.75MC	6			
			81.75MC	5			
			65.75MC	3			
			59.75MC	2			

ALIGNMENT INSTRUCTIONS (CONT.)

RF & MIXER ALIGNMENT

To properly align the RF and Mixer circuits, laboratory type precision equipment is necessary. Ordinary type service signal generator and oscilloscope will not give satisfactory results.

(a) Set the dial to channel 4 by feeding a 71.75MC signal into the receiver and tuning dial for zero output at the discriminator. (See step 9 of oscillator alignment).

(b) Locate the blue lead coming from the tuner, this lead comes thru the hole in the right side of the tuner and connects to coil L10 and R19.

(c) Unsolder the blue lead from L10 and connect it thru a 5600Ω resistor to the end of R19 opposite where the blue lead was removed.

(d) Connect the oscilloscope vertical input to the junction of the blue lead and the 5600Ω resistor. Connect the low side of the scope to chassis.

(e) After step 12 is completed reconnect the blue lead to L10 and set the dial to channel 13 by feeding a 215.75MC signal into the receiver and tuning the dial for zero discriminator output. (See step 10 of oscillator alignment)

(f) Reconnect the blue lead as in step "C" above. Continue with alignment step 13.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
12.	Two 125Ω carbon res.	Across antenna terminals with 125Ω in each lead.	69MC (10MC Sweep)	71.75MC 67.25MC	4 (See step "a" above)	See step "d" above.	A20, A21, A22	Adjust for a band pass of 4.5MC similar to Fig 5. The adjustment of A21 and A22 is correct when the rocking of A20 back and forth causes no appreciable change in the response curve amplitude. The dip between the two markers should not exceed 30%.
13.	"	"	213MC (10MC Sweep)	215.75MC 211.25MC	13 (See step "e" above)	"	L3, L5 C9, C12	Adjust of high band is accomplished by the positioning of L3, L5, C9 & C13. If the band width exceeds 6MC or is less than 4.5MC it will be necessary to remove the tuner and replace the bottom shield with a dummy shield with a 1 inch square cutout to gain access to L3, L5, C9 and C12. If bandwidth is very much over 6MC. tuner should be replaced.

14. CAUTION

All other channels should be checked for calibration with only a signal generator connected to the antenna terminals using amplitude modulation in a point to point check to eliminate the possibility of error in impedance matching with various types of sweep equipment.

AM ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
15	.05MFD	High side to stator of center section of tuning gang. Low side to chassis.	455KC (400∿ Mod.)	AM (second pos. clockwise)	Tuning gang fully open	Across voice coil	A22, A23, A24, A25	Adjust for maximum output.
16	200MMF	High side to ungrounded loop antenna terminal. Low side to chassis.	1400KC (400∿ Mod.)	"	1400KC	"	A26, A27	"
17		Loop	1400KC (400∿ Mod.)	"	"	"	A28	Replace chassis in cabinet. Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.

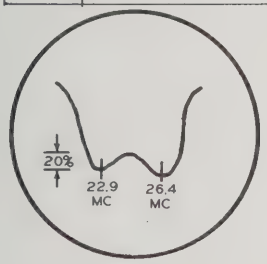


FIG. 1

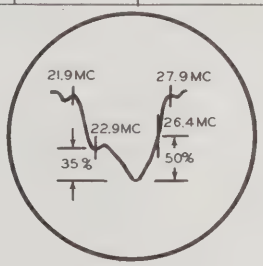


FIG. 2

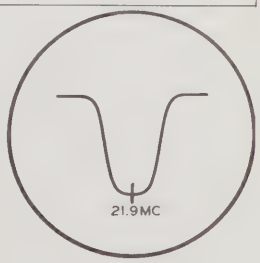


FIG. 3

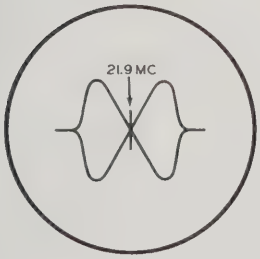


FIG. 4

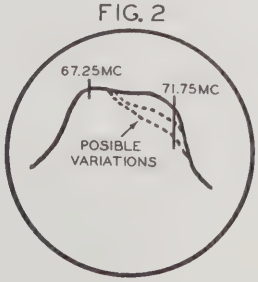


FIG. 5

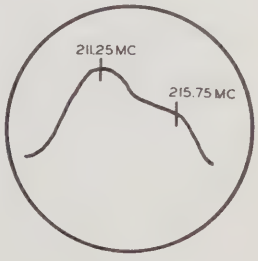


FIG. 6

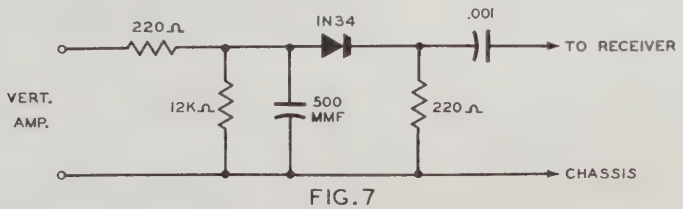


FIG. 7

CROSLEY MODELS
9-403M, 9-403M-2, 9-404M, 9-413B,
9-413B-2, 9-414B, 9-420M, 9-424B

VOLTAGE AND RESISTANCE MEASUREMENTS

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6J6	.3VDC	235VDC	0V	6.3VAC	0V	0V	1.9VDC		
V 2	6AK5	§-1.1VDC	.1VDC	0V	6.3VAC	210VDC	45VDC	.1VDC		
V 3	6J6	230VDC	0V	6.3VAC	0V	0V	0V	0V		
V 4	6AG5	0V	1.1VDC	6.3VAC	0V	150VDC	150VDC	1.1VDC		
V 5	6AG5	0V	.9VDC	6.3VAC	0V	145VDC	145VDC	.9VDC		
V 6	6AG5	0V	.9VDC	6.3VAC	0V	165VDC	170VDC	.9VDC		
V 7	6AL5	-3.1VDC	-.6VDC	6.3VAC	0V	0V	0V	-3.1VDC		
V 8	12AU7	112VDC	-3.3VDC	0V	6.3VAC	6.3VAC	◓ 185VDC	◓ 0V	◓ 2.2VDC	0V
V 9	6AU6	-.7VDC	0V	0V	6.3VAC	210VDC	150VDC	.8VDC		
V 10	6AU6	-.2VDC	0V	0V	6.3VAC	215VDC	65VDC	.4VDC		
V 11	6T8	0V	-1VDC	.3VDC	6.3VAC	0V	-1VDC	0V	-.7VDC	87VDC
V 12	6V6GT	0V	0V	210VDC	225VDC	0V	-.2VDC	6.3VAC	13VDC	
V 13	6SN7GT	-.8VDC	137VDC	0V	-.6VDC	230VDC	9.6VDC	6.3VAC	0V	
V 14	6SN7GT	◓ -.1VDC	◓ 300VDC	◓7VDC ◓17.5VDC	◓-2VDC ◓-5VDC	◓55VDC ◓110VDC	◓ 0V	6.3VAC	0V	
V 15	6SN7GT	◓ -.6VDC	◓ 142VDC	◓ 13VDC	◓ -32VDC	◓ 145VDC	◓ 0V	6.3VAC	0V	
V 16	6BG6G	◓ 0V	6.3VAC	◓ 10VDC	◓ 0V	◓ 0V	◓ 0V	0V	◓270VDC	TOP CAP *
V 17	5V4G	0V	300VDC	130VDC	250VDC	0V	250VDC	0V	300VDC	
V 18	1B3GT	* DO NOT MEASURE								
V 19	5Y3GT	65VDC	250VDC	130VDC	300VAC	13VDC	300VAC	-92VDC	250VDC	
V 20	5Y3GT	0V	250VDC	0V	300VAC	0V	300VAC	0V	250VDC	
▲ V 21	6BA6	-.3VDC	0V	0V	6.3VAC	185VDC	77VDC	0V		
▲ V 22	6BE6	§ -7.4VDC	0V	0V	6.3VAC	185VDC	77VDC	-.4VDC		
▲ V 23	6SF7	0V	-.4VDC	0V	70VDC	-.4VDC	192VDC	0V	6.3VAC	
V 24	10BP4	♦130VDC	70VDC	PIN 10 280VDC	PIN 11 400VDC	PIN 12 ♦130VDC				

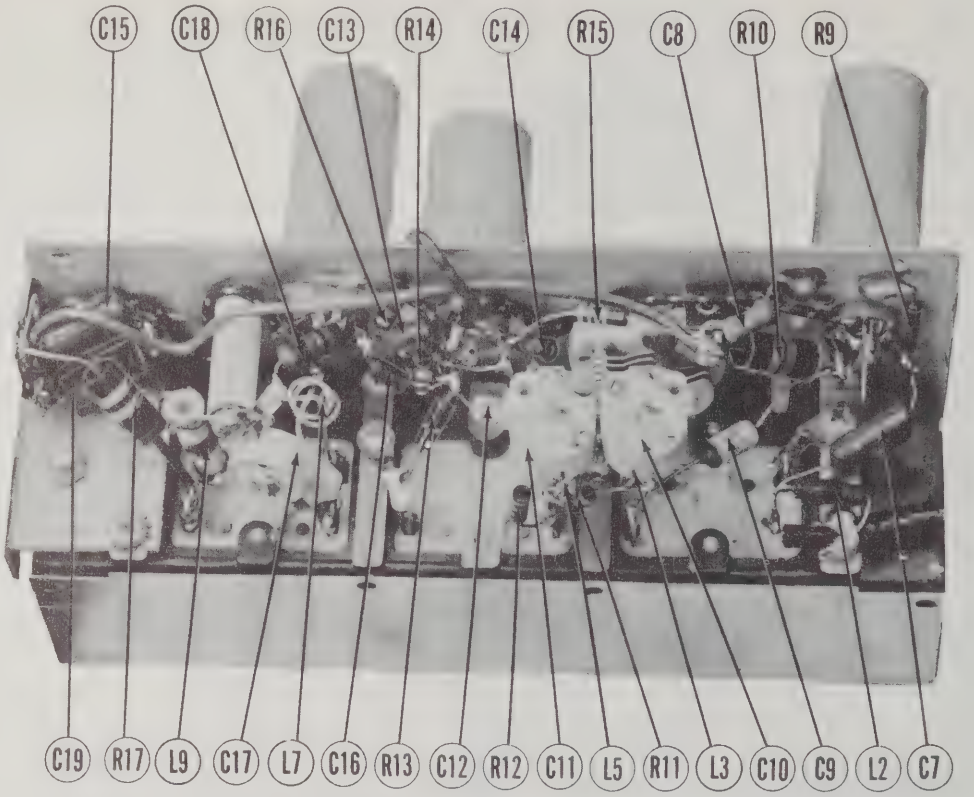
* Do not measure.
§ Taken with vacuum tube voltmeter.
▲ Measured in AM position.
◓ Measured from pin 6 of V15
♦ 6.3VAC measured across filaments.
Note: These measurements taken with contrast control set at maximum.

RESISTANCE READINGS

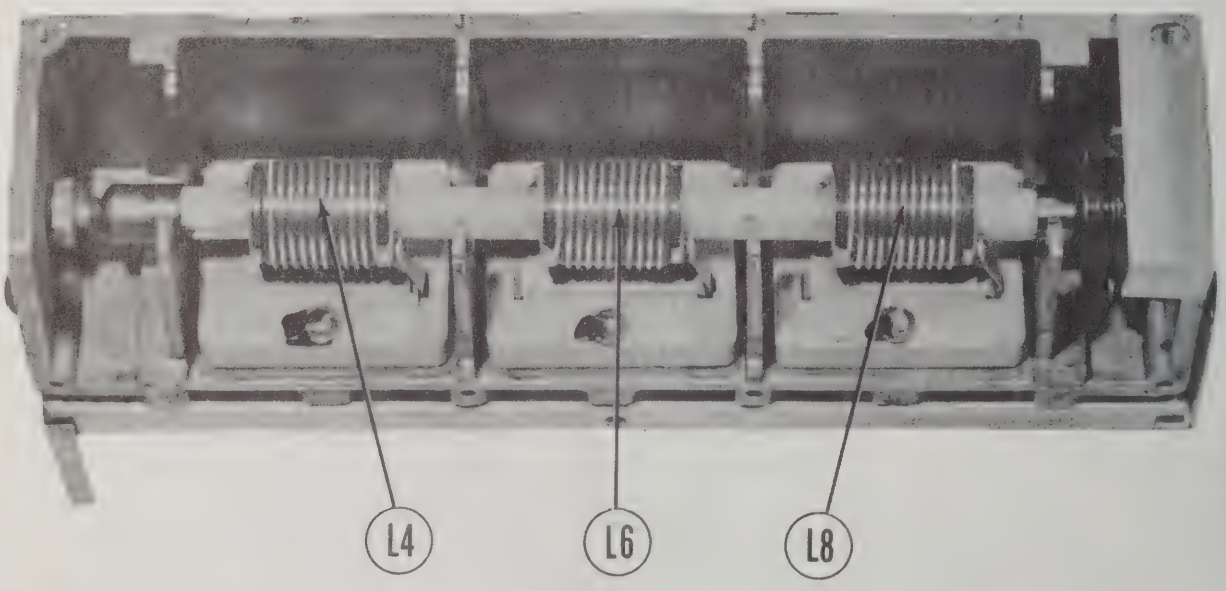
Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6J6	†12KΩ	†12KΩ	0Ω	.1Ω	0Ω	0Ω	200Ω		
V 2	6AK5	1 Meg.	47Ω	0Ω	.1Ω	†20KΩ	†330KΩ	47Ω		
V 3	6J6	†12KΩ	0Ω	.1Ω	0Ω	0Ω	12KΩ	0Ω		
V 4	6AG5	100KΩ	68Ω	.1Ω	0Ω	†7KΩ	†7KΩ	68Ω		
V 5	6AG5	120KΩ	68Ω	.1Ω	0Ω	†7KΩ	†7KΩ	68Ω		
V 6	6AG5	.7Ω	100Ω	.1Ω	0Ω	†7KΩ	†7KΩ	100Ω		
V 7	6AL5	22Ω	4 Meg.	.1Ω	0Ω	0Ω	0Ω	4.7KΩ		
V 8	12AU7	†6.5KΩ	4.7KΩ	0Ω	.1Ω	.1Ω	†8KΩ	1 Meg.	◓150Ω	0Ω
V 9	6AU6	250KΩ	0Ω	0Ω	.1Ω	†1.2KΩ	†14KΩ	68Ω		
V 10	6AU6	56KΩ	0Ω	0Ω	.1Ω	†1.2KΩ	†12KΩ	68Ω		
V 11	6T8	Inf.	100KΩ	200KΩ	.1Ω	0Ω	100KΩ	0Ω	4 Meg.	†330KΩ
V 12	6V6GT	470KΩ	0Ω	†1.7KΩ	†1.2KΩ	470KΩ	250KΩ	.1Ω	470Ω	
V 13	6SN7GT	1 Meg.	†15KΩ	0Ω	4 Meg.	†250Ω	6.8KΩ	.1Ω	0Ω	
V 14	6SN7GT	2.2Meg.	†2KΩ	◓5KΩ ◓600Ω	◓3.2Meg. ◓1.2Meg.	#4 Meg. #1.5Meg.	700Ω	.1Ω	0Ω	
V 15	6SN7GT	840KΩ	◓150KΩ	280KΩ	200KΩ	#130KΩ	700Ω	.1Ω	0Ω	
V 16	6BG6G	700Ω	.1Ω	◓100Ω	700Ω	1 Meg.	1 Meg.	0Ω	†5KΩ	TOP CAP #240Ω
V 17	5V4G	Inf.	150KΩ	9KΩ	†50Ω	Inf.	†50Ω	Inf.	150KΩ	
V 18	1B3GT	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	TOP CAP #440Ω
V 19	5Y3GT	500KΩ	10KΩ	10KΩ	700Ω	2.5Meg.	750Ω	720Ω	10KΩ	
V 20	5Y3GT	Inf.	10KΩ	Inf.	750Ω	Inf.	750Ω	Inf.	10KΩ	
▲ V 21	6BA6	3.5 Meg.	0Ω	0Ω	.1Ω	†4.5KΩ	†17KΩ	0Ω		
▲ V 22	6BE6	22KΩ	1Ω	0Ω	.1Ω	†4.5KΩ	†17KΩ	3.5Meg.		
▲ V 23	6SF7	0Ω	2.3Meg.	0Ω	†50KΩ	250KΩ	†4.5KΩ	0Ω	.1Ω	
V 24	10BP4	†3KΩ	†8KΩ	PIN 10 #56KΩ	PIN 11 44KΩ	PIN 12 †3KΩ				

† Measured from pin 8 of V19
# Measured from pin 8 of V17
◓ Measured from pin 6 of V15
▲ Measured in AM position.

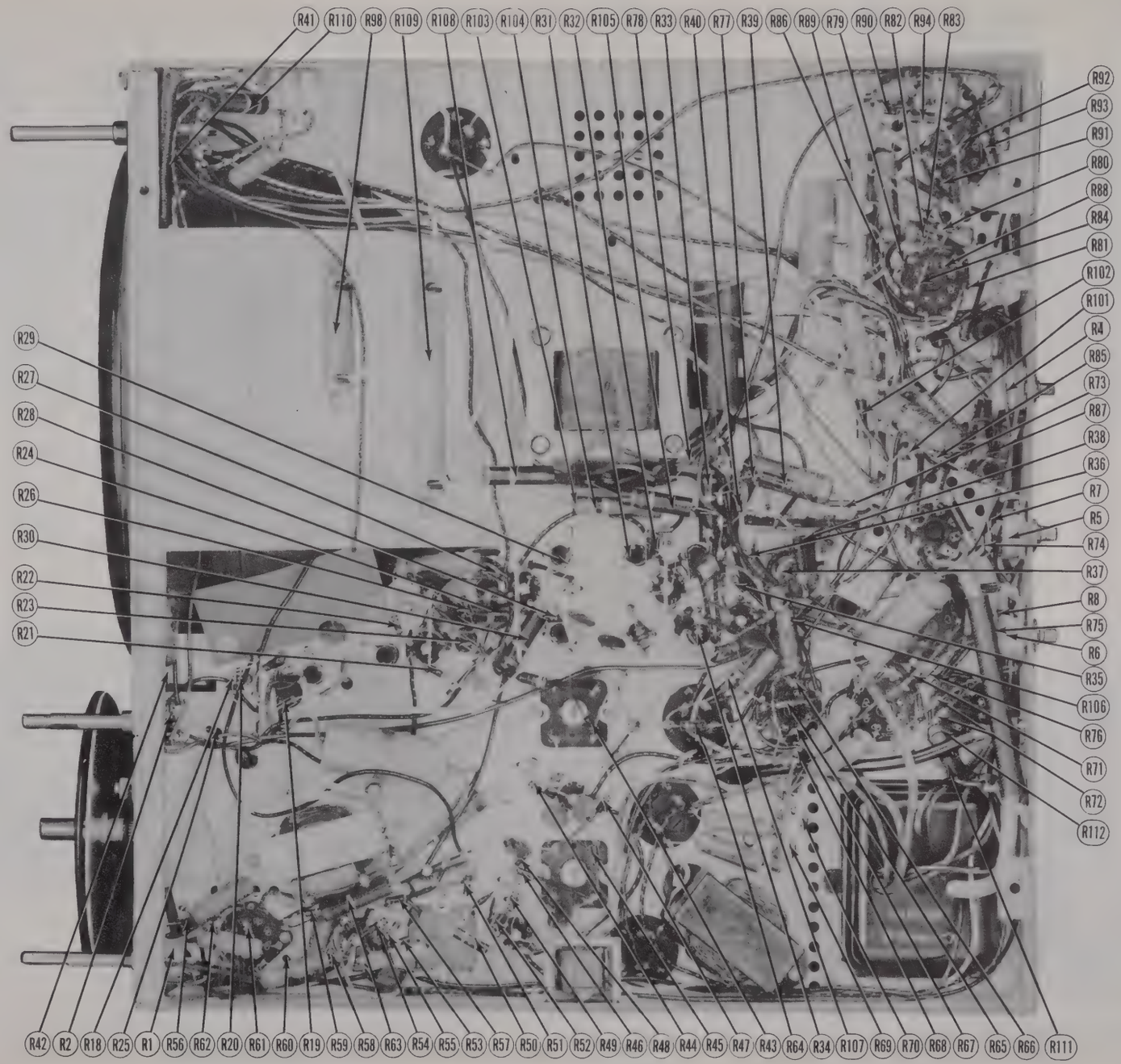
1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltage measured at 1,000 ohms.
2. Pin numbers are counted in a clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings.
5. Front panels controls set at minimum.
6. Where readings may vary according to the setting of the service controls, both minimum and maximum readings are given.



INDUCTUNER-SIDE VIEW



INDUCTUNER-INSIDE VIEW



CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: CROSLEY PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1	RF Amp.	6J6	6J6	7BF	
V2	Mixer	6AK5	6AK5	7BD	
V3	Oscilllator	6J6	6J6	7BF	
V4	1st Video IF	6AG5	6AG5	7BD	
V5	2nd Video IF	6AG5	6AG5	7BD	
V6	3rd Video IF	6AG5	6AG5	7BD	
V7	Video Det.-Sync. Clamper	6AL5	6AL5	6BT	
V8	Video Amp.	12AU7	12AU7	9A	
V9	1st Sound IF	6AU6	6AU6	7BK	
V10	2nd Sound IF	6AU6	6AU6	7BK	
V11	Disc.-AF Amp.	6T8	6T8	9E	
V12	Audio Output	6V6GT	6V6GT	7AC	
V13	Sync. Amp.-Sync. Sep.	6SN7GT	6SN7GT	8BD	
V14	Vert. Osc.-Vert. Disch.-Vert. Output	6SN7GT	6SN7GT	8BD	
V15	Hor. AFC-Hor. Osc.	6SN7GT	6SN7GT	8BD	
V16	Hor. Output	6BG6G	6BG6G	5BT	
V17	Damper	5V4G	5V4G	5L	
V18	HV Rectifier	1B3GT	1B3GT	3C	
V19	LV Rectifier	5Y3GT	5Y3GT	5T	
V20	LV Rectifier	5Y3GT	5Y3GT	5T	
V21	AM RF Amp.	6BA6	6BA6	7BK	Model 9-404M, 9-414B only.
V22	AM Converter	6BE6	6BE6	7CH	Model 9-404M, 9-414B only.
V23	AM IF Amp.-Det.-AVC	6SF7	6SF7	7AZ	Model 9-404M, 9-414B only.
V24A	Picture Tube	10BP4	10BP4	12D	
B	Picture Tube	10FP4	10FP4	12D	Models 9-403M-2 and 9-413B-2 only.

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA: CROSLEY PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	40	450	B-144293	AFH88J	UP4445		TVL-64	◓ Filter
B	40	450						▲ Filter
C2A	40	450	B-144293	AFH88J	UP4445		TVL-64	◓ Filter
B	40	450						▲ Filter
C3A	30	450	B-144292	AF88J	UP7BJ948		TVL-64	◓ Filter
B	40	150						▲ Filter
C4	16	400	B-144989	PRS450/16	BR1645		TVA-22	Filter
C5A	10	450	B-144294	AF2222J	UP7BJ		TVL-36	■ Decoupling
B	10	450		PRS25/100	942T		TVA-8	◓ Vert. Output Dec.
C	10	450						▲ Decoupling
D	100	25						Vert. Output Cath. Bypass
C6A	20	400	B-144521	PRS450/20	BR2045		UT-220	Decoupling-Red
B	20	25		PRS25/25	BR202A			Output Cath. Bypass Blue
C7	470	500	W-160633-20			GP2K-470		RF Coupling
C8	470		W-160082			GP2K-470		RF Bypass
C9	15		W-160080			GP1K-15		RF Coupling
C10	2-12		W-160247			TS2A-N500-2-12		Fixed Padder
C11	2-12		W-160247			TS2A-N500-2-12		Fixed Padder
C12	15		W-160080			GP1K-15		RF Coupling
C13	470		W-160082			GP2K-470		Mixer Fil. Bypass
C14	470		W-160082			GP2K-470		Mixer Screen Bypass
C15	470		W-160082			GP2K-470		RF Bypass
C16	1		W-137398-2					Osc. Coupling
C17	2-12		W-160247			TS2A-N500-2-12		Fixed Trimmer
C18	5		W-160084			NP0K-5		Osc. Grid Cap.
C19	470	500	W-160633-20			GP2K-470		Osc. Fil. Bypass
C20	5000		B-144675-2	1467-005	1D5D5	811-005	29C1	Mixer Plate Dec.
C21	5000		B-144675-2	1467-005	1D5D5	811-005	29C1	IF Coupling
C22	5000		B-144675-2	1467-005	1D5D5	811-005	29C1	RF Bypass
C23	5000		B-144675-2	1467-005	1D5D5	811-005	29C1	Bias Filter
C24	.1	200	39001-19	P288-1	GT2P1		TM-1	Bias Filter
C25	5000		B-144675-2	1467-005	1D5D5	811-005	29C1	1st V. IF Decoupling
C26	2.5		AW-144848					IF Coupling
C27	5000		B-144675-2	1467-005	1D5D5	811-005	29C1	Bias Filter
C28	5000		B-144675-2	1467-005	1D5D5	811-005	29C1	2nd V. IF Fil. Bypass
C29	5000		B-144675-2	1467-005	1D5D5	811-005	29C1	2nd V. IF Decoupling
C30	20		C-137727-81		5R5Q2	NP0K-20	MS-42	Fixed Trimmer
C31	10		C-137727-85	1469-00001	5R5Q1	NP0K-10	MS-41	Fixed Trimmer
C32	5000		B-144675-2	1467-005	1D5D5	811-005	29C1	IF Coupling
C33	5000		B-144675-2	1467-005	1D5D5	811-005	29C1	3rd V. IF Cath. Bypass
C34	5000		B-144675-2	1467-005	1D5D5	811-005	29C1	3rd V. IF Decoupling
C35	4		AW-144859					IF Coupling
C36	5		W-160084	1468-000005	5W5V5	NP0K-5	MS-55	V. Diode Filter
C37	5000		B-144675-2	1467-005	1D5D5	811-005	29C1	Bias Filter
C38	.05	400	39001-17	P488-05	GT4S5		TM-15	Video Coupling
C39	470	500	W-160633-20	1468-0005	5W5T5	GP2K-470	1FM-35	V. Amp. Cath. Bypass
C40	47		W-160081	1469-00005	5W5Q5	NP0M-50	MS-45	Fixed Trimmer
C41	.1	400	39001-19	P488-1	GT4P1		TM-1	Pic. Tube Cath. Dec.
C42	2.5		W-160078					S. IF Coupling
C43	5000		B-144675-2	1467-005	1D5D5	811-005	29C1	Bias Filter
C44	5000		B-144675-2	1467-005	1D5D5	811-005	29C1	Bias Filter
C45	2.5		W-160068					Fixed Trimmer
C46	5000		B-144675-2	1467-005	1D5D5	811-005	29C1	1st S. IF Screen Bypass
C47	5000		B-144675-2	1467-005	1D5D5	811-005	29C1	1st S. IF Decoupling
C48	5000		B-144675-2	1467-005	1D5D5	811-005	29C1	Bias Filter
C49	5000		B-144675-2	1467-005	1D5D5	811-005	29C1	Limiter Screen Bypass
C50	5000		B-144675-2	1467-005	1D5D5	811-005	29C1	Limiter Decoupling
C51	5000		B-144675-2	1467-005	1D5D5	811-005	29C1	Disc.-AF Fil. Bypass
C52	47		W-160081	1468-00005	5W5Q5	GP1K-47	1FM-45	RF Bypass
C53	47		W-160081	1468-00005	5W5Q5	GP1K-47	1FM-45	RF Bypass
C54	.003	600	39001-76	P688-003	GT6D3	GP2M-003	TM-23	De-emphasis

PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS (CONT.)

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA CROSLEY PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C55	.005	600	39001-11	P688-005	GT6D5	GP2M-005	TM-25	Audio Coupling
C56	.002	600	39001-74	P688-002	GT6D2	GP2M-002	TM-22	Tone Comp.
C57	.015	400	39001-80	P488-015	GT6S15		TM-12	Tone Comp.
C58	.01	400	39001-13	P488-01	GT4S1	GP2-335-01	TM-11	Audio Coupling
C59	.002	600	39001-74	P688-002	GT6D2	GP2M-002	TM-22	AF Plate Bypass †
C60	.01	400	39001-13	P488-01	GT4S1	GP2-335-01	TM-11	Audio Coupling
C61	.005	600	39001-11	P688-005	GT6D5	GP2M-005	TM-25	Output Plate Bypass
C62	.05	400	39001-17	P488-05	GT4S5		TM-15	Sync. Coupling
C63	.00025	600	39001-73	1468-00025	GT2T25	GP2K-250	TC-325	Sync. Coupling
C64	390	500	B-137498-28	1468-0004	5W5T4	GP2K-390	1FM-34	Sync. Sep. Cath. Bypass
C65	.002	600	39001-74	P688-002	GT6D2	GP2M-002	TM-22	Integrator Net.
C66	.005	600	39001-11	P688-005	GT6D5	GP2M-005	TM-25	Integrator Net.
C67	.005	600	39001-11	P688-005	GT6D5	GP2M-005	TM-25	Integrator Net.
C68	.005	600	39001-11	P688-005	GT6D5	GP2M-005	TM-25	Vert. Osc. Grid Cap.
C69	.1	400	39001-19	P488-1	GT4P1		TM-1	Vert. Discharge
C70	.25	400	39001-87	P488-25	GT4P25		TC-2	Vert. Sweep Coupling
C71	120	500	B-137498-17			GP2K-120		Hor. Sync. Coupling
C72	.002	600	39001-74	P688-002	GT6D2	GP2M-002	TM-22	Hor. Sync. Coupling
C73	.02	200	39001-80	P488-02	GT2S2		TM-12	AFC Filter
C74	.25	200	39001-87	P488-25	GT2P25		TC-2	AFC Filter
C75	220	500	B-137498-22	1468-0002	5W5T2	GP2K-220	1FM-32	Hor. Osc. Grid Cap.
C76	2200	500	B-137498-42			GP2M-0022		Hor. Discharge
C77	390	500	B-137498-28	1468-0004	5W5T4	GP2K-390	1FM-34	Hor. Sweep Coupling
C78	.05	400	39001-17	P488-05	GT4S5		TM-15	AFC Plate Bypass
C79	.25	200	39001-87	P488-25	GT2P25		TC-2	Hor. Output Cath. Bypass
C80	.05	400	39001-17	P488-05	GT4S5		TM-15	Hor. Output Screen Bypass
C81	.04	400	B-144862-2	P488-04	GT6S4		TM-14	Damper Filter
C82	.1	400	B-144862-1	P488-1	GT4P1		TM-1	Damper Filter
C83	5		W-160084	1468-000005	5W5V5	NP0K-5	MS-55	AFC Feedback
C84	.02	200	39001-80	P488-02	GT2S2		TM-12	Fixed Trimmer ‡
C85	500	10000	B-137477-1			410-500		HV Filter
C86	180		C-137727-24	1468-00015	5W5T15	GP2K-180	1FM-315	RF Coupling
C87	.01	600	39001-13	P688-01	GT6S1	GP2-335-01	TM-11	Decoupling
C88	.01	600	39001-13	P688-01	GT6S1	GP2-335-01	TM-11	Decoupling
C89	.025	200	39001-80	P488-025	GT4S25		TM-13	AVC Filter
C90	75		C-137727-36	1468-000075	5W5Z7	GP1K-75	1FM-475	Osc. Grid Cap,
C91	20		C-137727-84		5R5Q	NP0K-20	MS-42	Fixed Trimmer
C92	.025	200	39001-80	P488-025	GT4S25		TM-13	AVC Filter
C93	.01	600	39001-13	P688-01	GT6S1	GP2-335-01	TM-11	IF Screen Bypass
C94	.01	600	39001-13	P688-01	GT6S1	GP2-335-01	TM-11	IF Decoupling
C95A	100		*	1468-0001	5W5T1	GP1K-100	1FM-31	Diode RF Filter
B	100			1468-0001	5W5T1	GP1K-100	1FM-31	Diode RF Filter

* Items C95A and C95B and R122 are combined into one unit obtainable under MFGR'S Part No. B-142951-2.
† Some models use 250MMF in this application.
‡ Not used in all models.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA CROSLEY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
R1A	2.5 Meg.	½	39368-19	Q18-139X		Volume control, tapped @ 1.25 Meg.
B	Switch		Not Req.	76-1		Attach to R1A per instructions
R2A	25KΩ	½	C-144343	B11-1204‡‡		Contrast control, rear (Dual Concentric)
B	100KΩ	½		B11-1284‡‡		Brightness control, front (Dual Concentric)
C	Shaft					
	End			E187‡‡		Attach per instructions in "Concentrikit".
R3	1 Meg.	½	39368-8	Q13-137	M-63-Z	Tone control (Models 9-404M & 9-414B only)
R4	2250Ω	4	B-144258		10-2500	Focus control (Wire Wound)
R5	50KΩ	½	B-144261	Q11-123	M-44-S	Horiz. hold control
R6	2.5Meg.	½	B-144259	Q11-239	M-64-S	Height control
R7	500KΩ	½	B-144260	Q11-114	M-19-S	Vert. linearity control
R8	1 Meg.	½	B-144262	Q11-137	M-61-S	Vert. hold control

‡‡ Additional parts to be used with "Concentrikit".

RESISTORS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA CROSLEY PART No.	IRC PART No.	IDENTIFICATION CODES ALL RESISTORS ARE ± 10% UNLESS OTHERWISE STATED.
R9	200Ω 5%	½	39375-32		RF Cathode
R10	10KΩ	2	39374-213		RF Plate
R11	12KΩ	½	39374-38		RF Plate Coil Shunt
R12	12KΩ	½	39374-38		Mixer Grid Coil Shunt
R13	1 Meg.	½	39374-61		Mixer Grid
R14	47Ω	½	39374-9		Mixer Cathode
R15	330KΩ	½	39374-55		Mixer Screen
R16	12KΩ	½	39374-38		Osc. Grid
R17	10KΩ	2	39374-213		Osc. Plate
R18	47Ω	½	39374-21		Decoupling Network
R19	8200Ω 5%	½	39375-71		Mixer Plate Transformer Shunt
R20	18KΩ	½	39374-40		Mixer Plate Decoupling
R21	5600Ω 5%	½	39375-67		1st Video IF Grid
R22	68Ω	½	39374-11		1st Video IF Cathode
R23	10KΩ 5%	½	39375-73		1st Video IF Plate Coil Shunt
R24	6800Ω	2	39374-211		1st Video IF Decoupling
R25	100KΩ	½	39374-49	BTS-100K	Bias Network
R26	10KΩ	½	39374-37	BTS-10K	Bias Network
R27	10KΩ 5%	½	39375-73		2nd Video IF Grid Coil Shunt
R28	68Ω	½	39374-11		2nd Video IF Cathode
R29	6800Ω 5%	½	39375-69		2nd Video IF Plate Coil Shunt
R30	6800Ω	2	39374-211		2nd Video IF Decoupling
R31	3900Ω 5%	½	39375-63		3rd Video IF Grid Coil Shunt
R32	100Ω	½	39374-13		3rd Video IF Cathode
R33	6800Ω	2	39374-211		3rd Video IF Decoupling
R34	39KΩ 5%	½	39375-87		Video Det. Coil Shunt
R35	4700Ω 5%	½	39375-65	BTS-4700-5%	Video Det. Diode Load
R36	3300Ω	½	39374-31	BTS-3300	Video Amp. Plate
R37	150Ω	½	39374-15	BW-½-150	Video Amp. Cathode
R38	1 Meg.	½	39374-61	BTS-1 Meg.	Video Amp. Grid

RESISTORS (CONT.)

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA CROSLEY PART No.	IRC PART No.	IDENTIFICATION CODES
R39	33000 5%	½	39375-209	BTS-3300-5%	Video Amp. Plate
R40	10000 5%	½	39375-49	BTS-1000-5%	Video Amp. Plate
R41	47KΩ	½	39374-45	BTS-47K	Voltage Divider
R42	68KΩ	½	39374-47	BTS-68K	Voltage Divider
R43	100KΩ	½	39374-49		1st Sound IF Grid
R44	68Ω	½	39374-11		1st Sound IF Cathode
R45	12KΩ	½	39374-38		1st Sound IF Screen
R46	1000Ω	½	39374-25		1st Sound IF Decoupling
R47	100KΩ	½	39374-49		1st Sound IF Grid Filter
R48	56KΩ	½	39374-46		2nd Sound IF Grid
R49	68Ω	½	39374-11		2nd Sound IF Cathode
R50	18KΩ	1	39374-128		2nd Sound IF Screen
R51	1000Ω	½	39374-25		2nd Sound IF Decoupling
R52	10KΩ	½	39374-37	BTS-10K	Voltage Divider
R53	100KΩ	½	39374-49	BTS-100K	Disc. Diode Load
R54	100KΩ	½	39374-49	BTS-100K	Disc. Diode Load
R55	27KΩ	½	39374-42	BTS-27K	De-emphasis
R56	100KΩ	½	39374-49	BTS-100K	Tone Compensation
R57	10 Meg.	½	39374-85	BTS-10 Meg.	Voltage Divider
R58	4.7 Meg.	½	39374-77	BTS-4.7 Meg.	AF Grid
R59	330KΩ	½	39374-55	BTS-330K	AF Plate
R60	100KΩ	½	39374-49	BTS-100K	Tone Compensation
R61	470KΩ	½	39374-57	BTS-470K	Output Grid
R62	470Ω	1	39374-109	BTA-470	Output Cathode
R63	1000Ω	2	39374-201	BW-2-1000	Filter
R64	1 Meg.	½	39374-61	BTS-1 Meg.	Sync. Amp. Grid
R65	15KΩ	½	39374-39	BTS-15K	Sync. Amp. Plate
R66	3.9 Meg.	½	39374-75	BTS-3.9 Meg.	Sync. Sep. Grid
R67	6800Ω	½	39374-35	BTS-6800	Sync. Sep. Cathode
R68	22KΩ	½	39374-41	BTS-22K	Integrator
R69	8200Ω	½	39374-36	BTS-8200	Integrator
R70	8200Ω	½	39374-36	BTS-8200	Integrator
R71	10KΩ	½	39374-37	BTS-10K	Vert. Osc. Transformer Shunt
R72	1.2 Meg.	½	39374-63	BTS-1.2 Meg.	Vert. Osc. Grid See Note 1
R73	1.5 Meg.	½	39374-65	BTS-1.5 Meg.	Voltage Divider
R74	56KΩ	½	39374-46	BTS-56K	Feedback
R75	560Ω	½	39374-22	BTS-560	Vert. Output Cathode
R76	2.2 Meg.	½	39374-69	BTS-2.2 Meg.	Vert. Output Grid
R77	3300Ω	½	39374-31	BTS-3300	Vert. Peaking
R78	1000Ω	½	39374-25	BTS-1000	Filter
R79	560KΩ	½	39374-58	BTS-560K	Horiz. AFC Grid
R80	180KΩ	½	39374-52	BTS-180K	Horiz. AFC Cathode
R81	100KΩ	½	39374-49	BTS-100K	Horiz. AFC Cathode
R82	8200Ω	½	39374-36	BTS-8200	Horiz. AFC Filter Network
R83	150KΩ	½	39374-51	BTS-150K	Horiz. AFC Filter Network
R84	3.3 Meg.	½	39374-73	BTS-3.3 Meg.	Voltage Divider
R85	150KΩ	½	39374-51	BTS-150K	Voltage Divider
R86	270KΩ	½	39374-54	BTS-270K	Voltage Divider
R87	10KΩ	½	39374-37	BTS-10K	Horiz. Osc. Transformer Shunt
R88	100KΩ	½	39374-49	BTS-100K	Horiz. Osc. Grid
R89	120KΩ	½	39374-50	BTS-120K	Horiz. Osc. Plate
R90	10KΩ	½	39374-37	BTS-10K	Filter
R91	47Ω	½	39374-9		Parasitic Supp.
R92	1 Meg.	½	39374-61	BTS-1 Meg.	Horiz. Output Grid
R93	100Ω	1	39374-101	BW-1-100	Horiz. Output Cathode
R94	4700Ω	1	39374-121	BTA-4700	Horiz. Output Screen
R95	560KΩ	½	39374-58	BTS-560K	Feedback
R96	3.3Ω	½	39303-14		HV Rect. Filament Wire Wound
R97	1 Meg.	½	39374-61		HV Filter
R98	350Ω	7	W-144456	AB-350	Filter Wire Wound
R99	100KΩ	1	39374-137	BTA-100K	Bleeder See Note 2
R100	100KΩ	1	39374-137	BTA-100K	Bleeder See Note 2
R101	390Ω	2	39374-196	BW-2-390	Focus Coil Shunt
R102	15Ω	1	39374-91	BW-1-15	Voltage Divider
R103	6800Ω	2	39374-211	BW-2-6800	Filter
R104	6800Ω	2	39374-211	BW-2-6800	Filter
R105	15KΩ	2	39374-215	BT-2-15K	Bleeder
R106	22Ω	½	39374-5	BW-½-22	Bias Network
R107	8.2Ω	½	39303-19	BW-½-8.2	Bias Network Wire Wound
R108	82Ω	2	39374-188	BW-2-82	Bias Network
R109	570Ω	14	W-144457		Bias Network Wire Wound
R110	15000Ω	2	39374-203	BT-2-1500	Voltage Dropping
R111	5.6Ω	1	39304-13		Surge Limiter Wire Wound
R112	5.6Ω	1	39304-13		Surge Limiter Wire Wound
R113	220KΩ 20%	½	39373-80	BTS-220K	AM RF Grid
R114	8200Ω	½	39374-36	BTS-8200	AM RF Transformer Shunt
R115	1 Meg. 20%	½	39373-92	BTS-1 Meg.	AVC Network
R116	22KΩ	½	39374-41	BTS-22K	Osc. Grid
R117	12KΩ	2	39374-214	BT-2-12K	Screen Dropping
R118	2200Ω	½	39373-60	BTS-2200	Decoupling
R119	2.2 Meg.	½	39373-97	BTS-2.2 Meg.	AVC Network
R120	47KΩ	½	39374-45	BTS-47K	AM IF Screen
R121	2200Ω	½	39373-40	BTS-2200	AM IF Decoupling
R122	47KΩ	½	*	BTS-47K	Diode Filter
R123	220KΩ	½	39374-53	BTS-220K	Diode Load

* Items C95A, C95B and R122 are combined into one unit, obtainable under MFGR'S Part No. B-142951-2.
Note 1. Some models use two resistors in parallel to obtain correct amount of resistance.
Note 2. Not used in all models.

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	REPLACEMENT DATA CROSLEY PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1	117VAC @ 2A	680VCT .26ADC @ 4A SEC. 4 6.3VAC @ 7.7A	5VAC @ 4A SEC. 5 6.3VAC @ .6A	5VAC @ 2A	B-144460			TP-355

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING DC RESISTANCE PRI.	RATING DC RESISTANCE SEC.	REPLACEMENT DATA CROSLEY PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	NOTES
T2	1462 Tap @ 1032		AW-144564				Hor. Osc. Coil
T3	170Ω	670Ω	B-144559	A-8111 #	A-3000 #	TBO-1 #	Vert.Block Osc.Trans
T4	307Ω Tap @ 107Ω	SEC. 1 10.1Ω Tap @ .5Ω SEC. 2 9Ω	B-144724	A-8117		TFB-1	Hor. Output Trans.
T5	640Ω	12Ω	B-145498	A-8115 §	A-3035 §	TSO-1 §	Vert.Output Trans.
T6A	14Ω		AB-144904	DY-1			Hor.Deflection Coil
B	68Ω						Vert.Deflection Coil
T7	285Ω		B-144298				Focus Coil

Drill one new mounting hole.
§ Drill new mounting holes.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING IMPEDANCE PRI.	RATING IMPEDANCE SEC.	RATING DC RES. PRI.	RATING DC RES. SEC.	REPLACEMENT DATA CROSLEY PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
T8	6200Ω	4.1Ω	500Ω	.5Ω	B-138131-2	A-3824	A-2904 #	RO-9	# Drill one new mounting hole.

FILTER CHOKE

ITEM No.	RATINGS TOTAL DIRECT CURRENT	RATINGS D.C. RESISTANCE	RATINGS INDUCTANCE (@ CURRENT 1000 ↓)	REPLACEMENT DATA CROSLEY PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
L1	.260A	55Ω	1.2Henries	B-144546	C-2326 #	C-2991 #	TR-3300#	# Drill one new mounting hole.

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA CROSLEY PART No.	MEISSNER PART No.	NOTES
L2	Ant. Coil	0Ω		AW-160018		Part of tuner.
L3	RF End Inductor	0Ω		AW-160218		Part of tuner.
L4	RF Plate Coil	0Ω				Part of inductuner D-144760
L5	Mixer End Inductor	0Ω		AW-160225		Part of tuner.
L6	Mixer Grid	0Ω				Part of inductuner D-144760
L7	Osc. End Inductor	0Ω		AW-160217		Part of tuner.
L8	Osc. Coil	0Ω				Part of inductuner D-144760
L9	Osc. Shunt	0Ω		AW-160054		Part of tuner.
L10	1st Video IF	.7Ω		AW-145208		
L11	RF Choke	0Ω		AW-160020		
L12	1st Video IF Coupling	.7Ω		AW-160155		
L13	2nd Video IF	.7Ω		AW-160155		
L14	2nd Video IF	.7Ω		AW-160155		
L15	3rd Video IF	.7Ω		AW-160163		
L16	21.9MC Sound Trap	.2Ω		AW-145195		
L17	Adjacent Channel Sound Trap	.2Ω		AW-145195		
L18	3rd Video IF	.7Ω		AW-160161		
L19	4th Video IF	.7Ω		AW-145328		
L20	4th Video IF	.7Ω		AW-145209		
L21	Peaking	20Ω		AW-160023-2		
L22	Peaking	10Ω		AW-144864		Wound on 22KΩ resistor.
L23	Peaking	10Ω		AW-160023-1		
L24	4.5MC Trap	1.5Ω		AW-160160		
L25	1st Sound IF	.1Ω	.1Ω	AC-160008		
L26	2nd Sound IF	.1Ω	.1Ω	AC-160008		
L27	Disc.Trans.	.5Ω	.1Ω	AC-160010		
L28	Width Cont.	.2Ω		AW-145139		
L29	Hor. Linearity	44Ω		AW-144551		
L30	AM Loop Ant.	0Ω		AB-145286		Models 9-404M and 9-414B.
L31	AM Ant. Loading	3Ω		AW-144764		
L32	AM RF Trans.	80Ω	9Ω	AW-144765		
L33	AM Osc.	9Ω		AW-144763	14-1060	
L34	AM 1st IF	16.5Ω	16Ω	AC-139919-3	16-6678	
L35	AM 2nd IF	10Ω	9.5Ω	AC-139919-4	16-6678	

PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			NOTES
	FIELD RES.	V. C. IMP.	CROSLEY PART No.	JENSEN PART No.	QUAM PART No.	
SP1A	PM	4.1Ω	138762-5	ST-120 †† MOD.P10-S	10A6A	Models 9-404M, 9-414B, 9-420, 9-424B
B	PM	4.1Ω	145087		57A15	Models 9-403M, 9-413B, 9-403M-2, 9-413B-2.
	CONE DIA.	V. C. DIA.				
SP2A	9 1/2"	1"				
B	4 3/4" x 7"	3/4"				

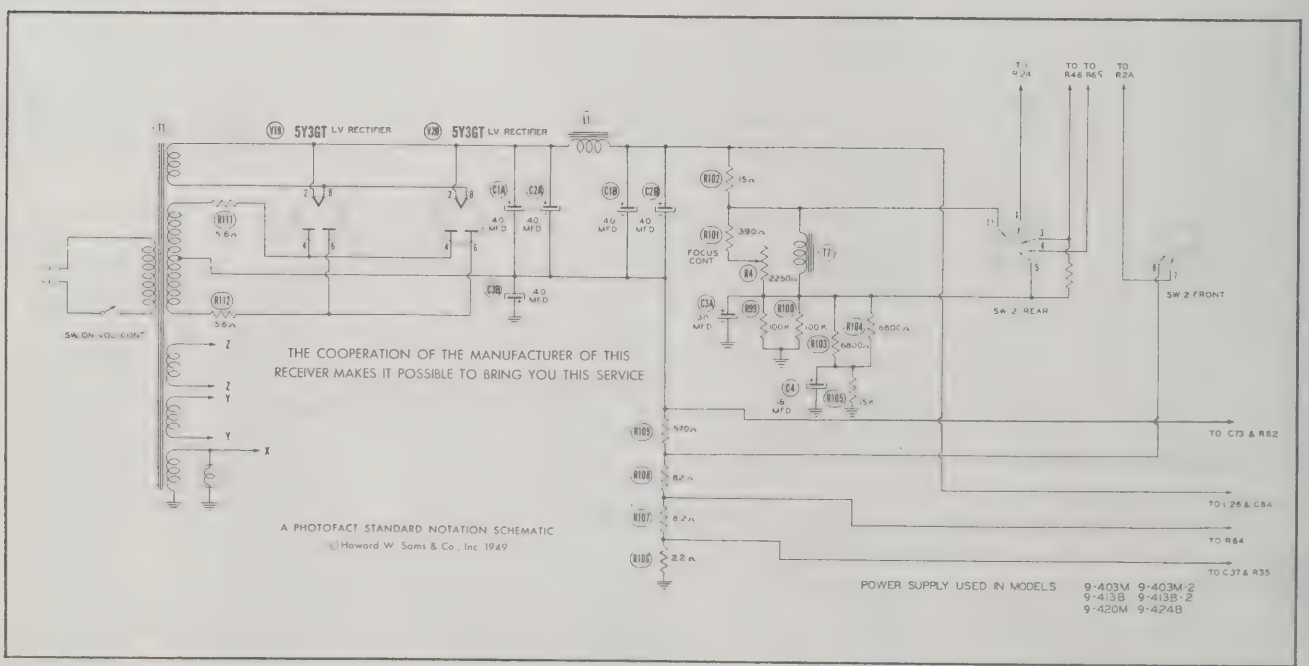
†† Replace output transformer to match 6-8Ω voice coil.

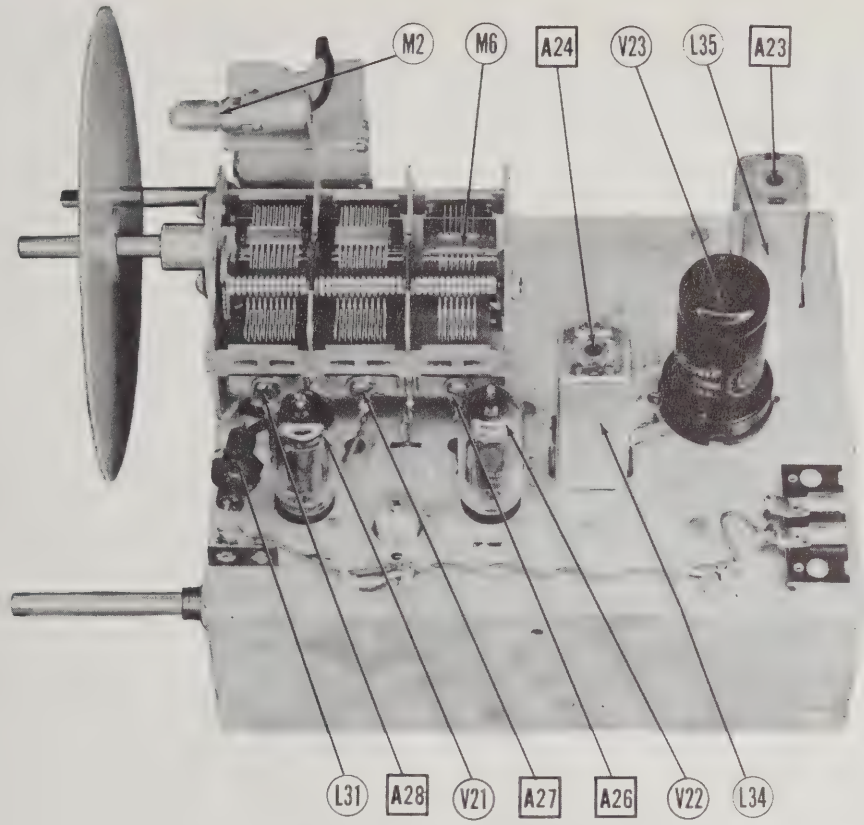
DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA CROSLEY PART No.		NOTES
M1	Bayonet	6-8	.15	Brown	138437-1		Type #47
M2	Bayonet	6-8	.15	Brown	138737-1		Type #47

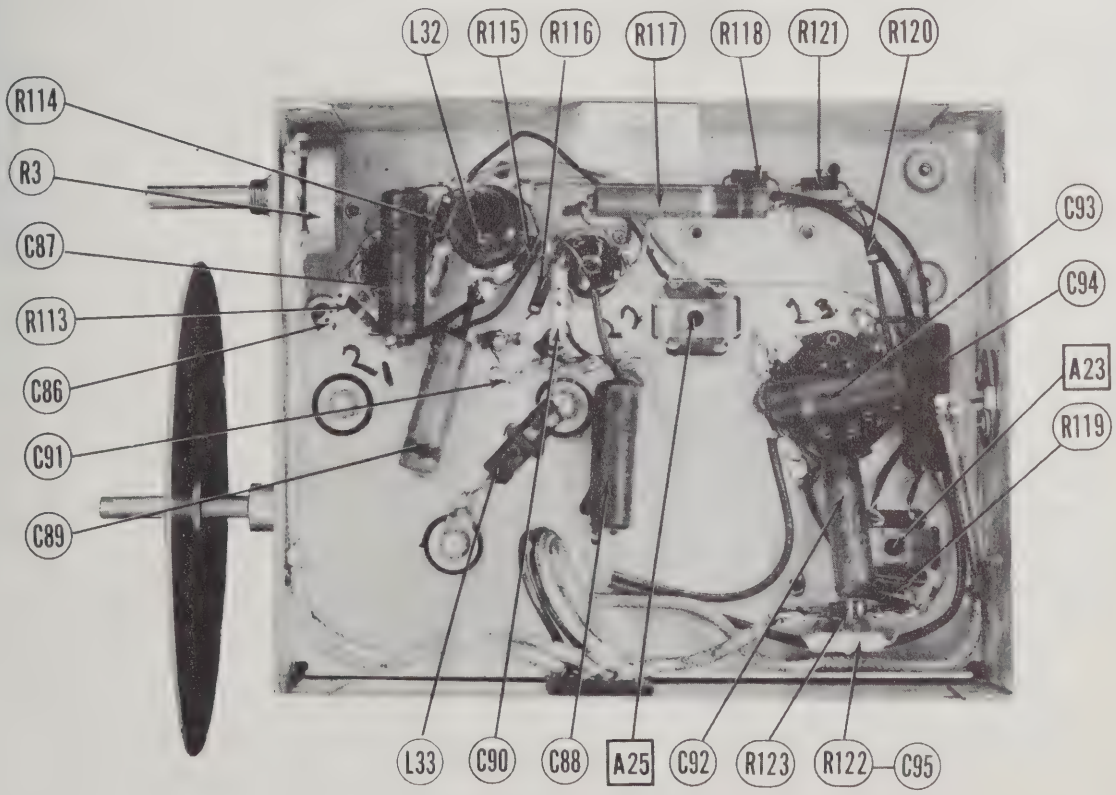
MISCELLANEOUS

ITEM No.	PART NAME	CROSLEY PART No.	NOTES
M3	RF Tuner	AR-144879-1	Complete
M4	Ion Trap	W-144315	PM
M5	Fuse	W-144898	Type GJC .2A
M6	Tuning Cap	C-144766	(27-397MMF, 25-389MMF, 15-200MMF) W/T
M7A	Function Switch	C-144320	Models 9-404M, 9-414B
B	Function Switch	C-144401	Models 9-403M, 9-413B, 9-403M-2, 9-413B-2, 9-420, 9-424B
	Safety Glass	144470	Models 9-404M and 9-414B
	Cabinet Back	R-144980	Models 9-404M and 9-414B
	Cabinet	R-145248	Model 9-404M
	Cabinet	R-145292	Model 9-414B
	Clip	C-138648-5	Coil mounting for L25, L26 and L27
	Clip	C-138648-4	Coil mounting for L10, L12, L13, L14, L15, L18 & L20
	Clip	C-138648-2	Coil mounting for L28, and L29
	Core	39012-85	Iron, for L25, L26, and L27
	Core	W-160426	Iron, For L10, L12, L13, L14, L15, L18 and L20
	Core	39012-91	Iron, for L24
	Core	39012-96	Iron, for L29
	Knob	C-144997-1	Tuning for model 9-404M
	Knob	C-144599-7	On-Off volume, and tone for model 9-404M
	Knob	C-143553-1	Brightness, model 9-404M
	Knob	C-143422-3	Contrast, model 9-404M
	Knob	C-144599-8	Selector switch, model 9-404M
	Knob	C-144997-2	Tuning, model 9-414B
	Knob	C-144599-3	On-Off volume and tone, model 9-414B
	Knob	C-143553-2	Brightness, model 9-414B
	Knob	C-143422-2	Contrast, model 9-414B
	Knob	C-144599-6	Selector switch, model 9-414B

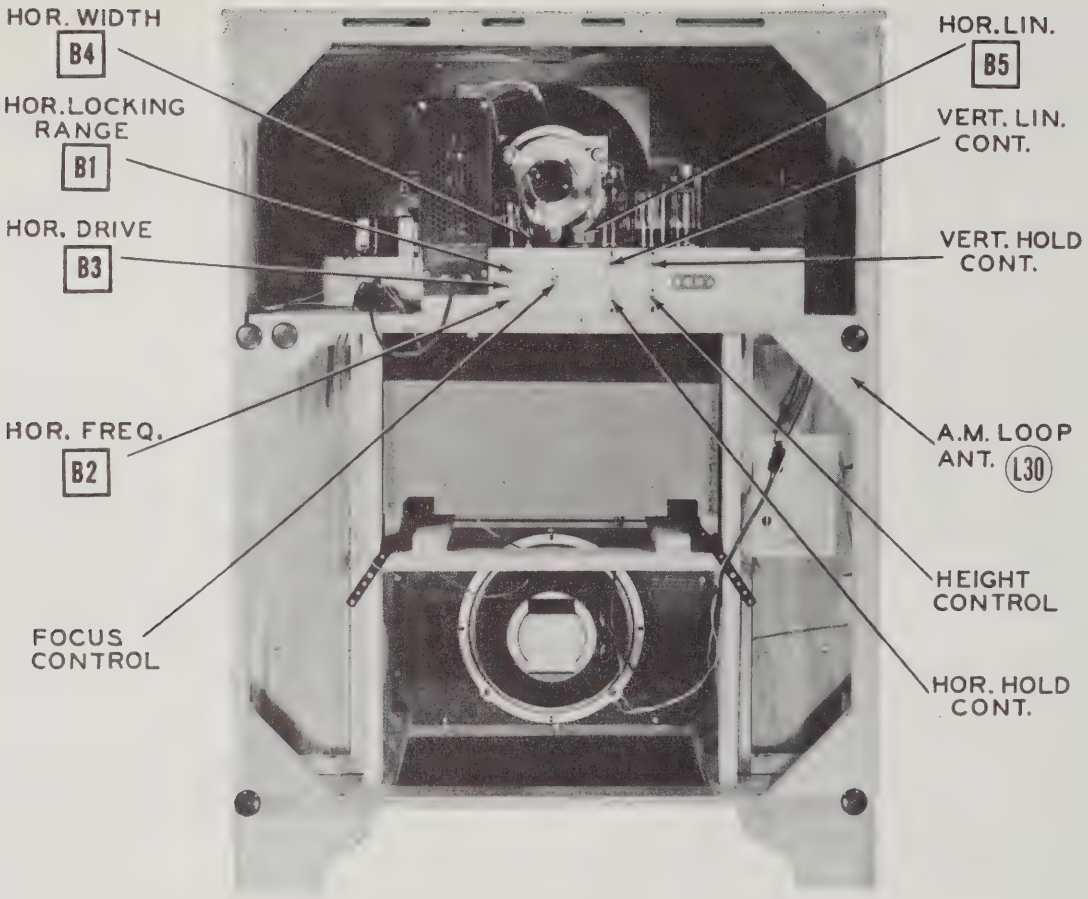

V19 5Y3GT LV RECTIFIER
V20 5Y3GT LV RECTIFIER
THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE
A PHOTOFACT STANDARD NOTATION SCHEMATIC
©Howard W. Sams & Co., Inc. 1949
FOCUS CONT
SW 2 REAR
SW 2 FRONT
TO C73 & R82
TO L28 & C84
TO R64
TO C37 & R35
POWER SUPPLY USED IN MODELS 9-403M 9-403M-2 9-413B 9-413B-2 9-420M 9-424B



AM TUNER–TOP VIEW



AM TUNER–BOTTOM VIEW



CABINET-REAR VIEW

HORIZONTAL OSCILLATOR ALIGNMENT

HORIZONTAL OSCILLATOR LOCK-IN RANGE CHECK.

Turn on the receiver and tune in a TV signal, preferably a test pattern.
Turn the vertical hold control to sync the picture vertically.
Turn the horizontal hold control to the extreme clockwise position. The picture should remain in sync. Turn the dial completely off of the station and back again, the picture should be out of sync.
Turn the horizontal hold control counter-clockwise until only three bars remain. The picture should fall into sync with a slight additional rotation of the control. This should occur at approximately 1/4 turn from maximum clockwise, and the picture should remain in sync for another additional 1/4 turn counter-clockwise. At the extreme counter-clockwise position the picture should be out of sync and show one blanking bar.
If the receiver failed the above check complete horizontal oscillator alignment will be required, proceed as follows:

COMPLETE HORIZONTAL OSCILLATOR ALIGNMENT

Set the horizontal hold control to the maximum clockwise position.
Turn the dial completely off of the station and back again. The picture should be out of sync.
Adjust B1 until 3 1/2 bars appear just before picture falls into sync as hold control is turned counter-clockwise.
In the event that the above condition cannot be obtained with adjustment of B1 it will be necessary to adjust B2 to get the proper results.
Adjustments B1 and B2 are interacting and should be adjusted alternately until the proper lock-in range is obtained.

HORIZONTAL LINEARITY ADJUSTMENTS

The horizontal drive trimmer (B3) is pre-set at the factory and normally should not require adjustment in the field.
If adjustment of B3 is seems necessary, it should be adjusted for best compromise between brightness and horizontal linearity.
Adjust B4 until the picture fills the mask horizontally.
Adjust B5 for best horizontal linearity.
Adjustments B4 and B5 are interacting and should be adjusted alternately for best results.

DAVID BOGEN
MODEL H30

DAVID BOGEN
MODEL H30

DAVID BOGEN MODEL H30

TRADE NAME	David Bogen, Model H30
MANUFACTURER	David Bogen Co., Inc., 663 Broadway, New York 12, New York
TYPE SET	AC Operated 2 Channel Audio Amplifier
TUBES(SEVEN)	Types 6SF5 Mic. 1 Pre-Amp., 6SF5 Mic. 2 Pre-Amp., 6SF5 1st AF Amp., 6SL7GT 2nd AF-Phase Inv., (2) 6L6G Power Output, 5U4G Rectifier
POWER SUPPLY	110-120 Volts AC RATING: 1.15 Amp. @ 117 Volts AC

CONNECTIONS

INPUT: The microphone channels have input impedances of 2 megohms and are for use with high impedance microphones. The phonograph channel has a 0.5 megohm input impedance and is for use with a high impedance phonograph pickup.

OUTPUT: Voice coil impedances of 4, 8 and 16 ohms are provided as well as a standard 70 Volt (164 ohms) constant voltage tap for speaker matching. In addition, if a 500 ohm output impedance is desired, the connection to terminal #3 of the output transformer may be changed to terminal #5. This changes the 164 ohm tap on the output strip to 500 ohms.

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed." "Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1949 by Howard W. Sams & Co., Inc., Indianapolis 7, Indiana, U. S. of America. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America

PARTS LIST AND DESCRIPTIONS

DAVID BOGEN
MODEL H30

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: DAVID BOGEN PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	Mic.#1 Pre-Amp.	6SF5	6SF5	6AB	
V2	Mic.#2 Pre-Amp.	6SF5	6SF5	6AB	
V3	1st AF Amp.	6SF5	6SF5	6AB	
V4	2nd AF Amp.-Phase Inverter	6SL7GT	6SL7GT	8BD	
V5	Power Output	6L6G	6L6G	7AC	
V6	Power Output	6L6G	6L6G	7AC	
V7	Rectifier	5U4G	5U4G	5T	

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: D. BOGEN PART No.	REPLACEMENT DATA: IRC PART No.	REPLACEMENT DATA: CLAROSTAT PART No.	INSTALLATION NOTES
R1	500KΩ	½	V-202B	Q13-133	M-60-Z	Microphone 1 volume control
R2	500KΩ	½	V-202B	Q13-133	M-60-Z	Microphone 2 volume control
R3	500KΩ	½	V-202B	Q13-133	M-60-Z	Phono volume control

CAPACITORS

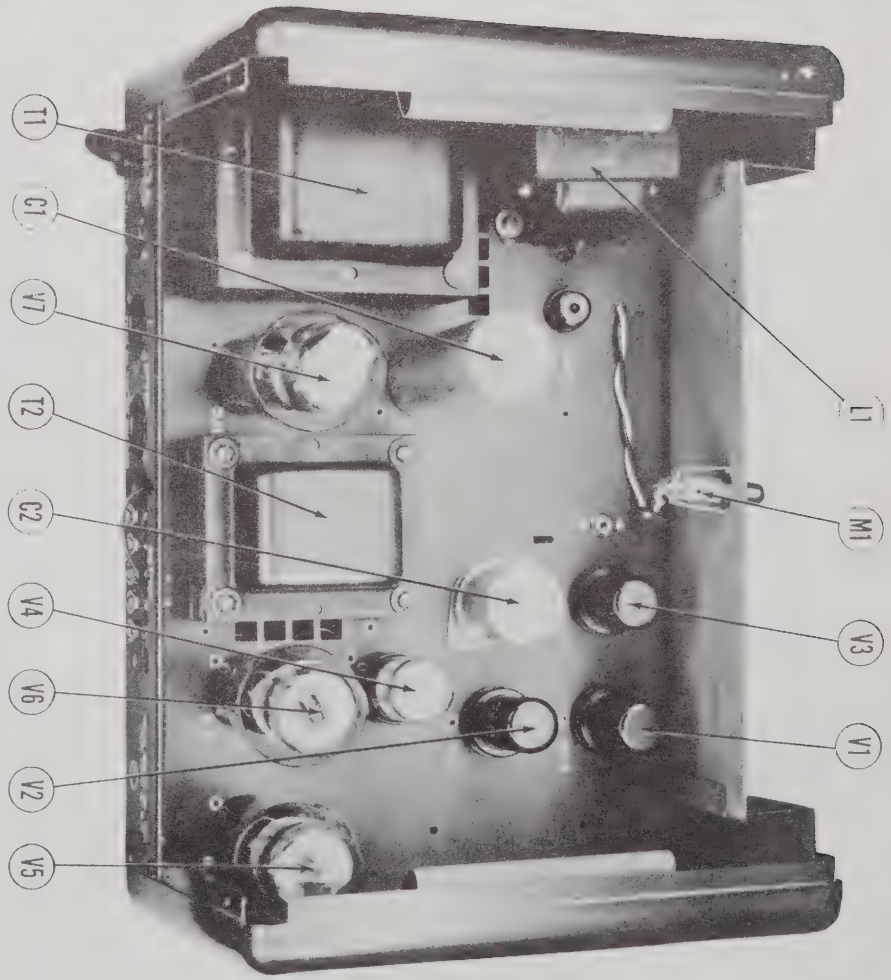
Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: DAVID BOGEN PART No.	REPLACEMENT DATA: AEROVOX PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: ERIE PART No.	REPLACEMENT DATA: SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	8	500		GL475/8-8	EB10018		CL-88	Filter Red-Black
B	8	500						Filter Blue-Yellow
C2A	5	450		AF2222J	UP5Q45		EL-410	▲ Decoupling
B	5	450						Decoupling
C	5	450						■ Decoupling
D	5	450						● Decoupling
C3	50	50		PRS50/50	BR505		TVA-16	Output Cathode Bypass
C4	.05	400		P488-05	GT4S5		TM-15	Audio Coupling
C5	.05	400		P488-05	GT4S5		TM-15	Audio Coupling
C6	.02	600		P688-02	GT6S2		TM-12	Audio Coupling
C7	.02	600		P688-02	GT6S2		TM-12	Audio Coupling
C8	.003	600		P688-003	GT6D3	GP2M-003	TM-23	Cathode Bypass
C9	.05	400		P488-05	GT4S5		TM-15	Audio Coupling
C10	.001	600		P688-001	GT6D1	GP2L-001	TM-21	Tone Comp.
C11	.006	600		P688-006	GT6D6		TM-26	Tone Comp.
C12	.01	600		P688-01	GT6S1	GP2-335-01	TM-11	Tone Comp.
C13	.01	600		P688-01	GT6S1	GP2-335-01	TM-11	Tone Comp.
C14	.05	400		P488-05	GT4S5		TM-15	Tone Comp.
C15	.1	400		P488-1	GT4P1		TM-1	Audio Coupling
C16	.1	400		P488-1	GT4P1		TM-1	Audio Coupling
C17	.02	600		P688-02	GT6S2		TM-12	Tone Comp.
C18	.006	600		P688-006	GT6D6		TM-26	Tone Comp.
C19	.1	500		P688-1	GT6P1		TM-1	Line Filter

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: DAVID BOGEN PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES
R4	2.2 Meg.	½		BTS-2.2 Meg.	Mic. #1 Pre-Amp. Grid
R5	220KΩ	½		BTS-220K	Mic. #1 Pre-Amp. Plate
R6	2.2 Meg.	½		BTS-2.2 Meg.	Mic. #2 Pre-Amp. Grid
R7	220KΩ	½		BTS-220K	Mic. #2 Pre-Amp. Plate
R8	500KΩ	½		BTS-470K	Isolation
R9	220KΩ	½		BTS-220K	Isolation
R10	220KΩ	½		BTS-220K	Isolation
R11	3300Ω	½		BTS-3300	1st AF Cathode
R12	330KΩ	½		BTS-330K	1st AF Plate
R13	100KΩ	½		BTS-100K	Decoupling
R14	47KΩ	½		BTS-47K	Decoupling
R15	47KΩ	½		BTS-47K	Tone Compensation
R16	47KΩ	½		BTS-47K	Tone Compensation

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	DAVID BOGEN PART No.	IRC PART No.	
R17	22KΩ	½		BTS-22K	Tone Compensation
R18	10KΩ	½		BTS-10K	Tone Compensation
R19	15KΩ	½		BTS-15K	Tone Compensation
R20	220KΩ	½		BTS-220K	Feedback
R21	15KΩ	½		BTS-15K	Feedback
R22	500KΩ	½		BTS-470K	2nd AF Grid
R23	2200Ω	½		BTS-2200	2nd AF Cathode
R24	270KΩ	½		BTS-270K	2nd AF Plate
R25	2200Ω	½		BTS-2200	Phase Inv. Cathode
R26	8200Ω	½		BTS-8200	Phase Inv. Grid
R27	270KΩ	½		BTS-270K	Phase Inv. Plate
R28	100KΩ	½		BTS-100K	Output Grid
R29	100KΩ	½		BTS-100K	Output Grid
R30	47Ω	½		BW-½-47	Output Cathode (Wire Wound)
R31	47Ω	½		BW-½-47	Output Cathode (Wire Wound)
R32	200Ω	8		AB-200	Output Cathode (Wire Wound)
R33	4700Ω	2		BT-2-4700	Tone Comp.
R34	4700Ω	2		BT-2-4700	Decoupling
R35A	2220Ω	4		AB-2250	Filter (Wire Wound)
B	20KΩ	16		DG-20K	Bleeder (Wire Wound

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	DAVID BOGEN PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1	117VAC @ 1.15A	780VCT .140ADC	5VAC @ 3A	6.3VAC @ 3.3A	T-365-1	P-6165	P-2955	PH-145

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		DAVID BOGEN PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T2	6.4KΩ CT	500Ω 164Ω 16Ω 8Ω 4Ω	110Ω CT	12Ω 7Ω .45Ω .3Ω .2Ω	T-261	A-3801 †	A-3130 †		† Drill new mounting holes.

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA				INSTALLATION NOTES
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ~)	DAVID BOGEN PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
L1	.140A	90Ω	3 Henries	T-404	C-1410 †		R-7150 †	† Drill new mounting holes.

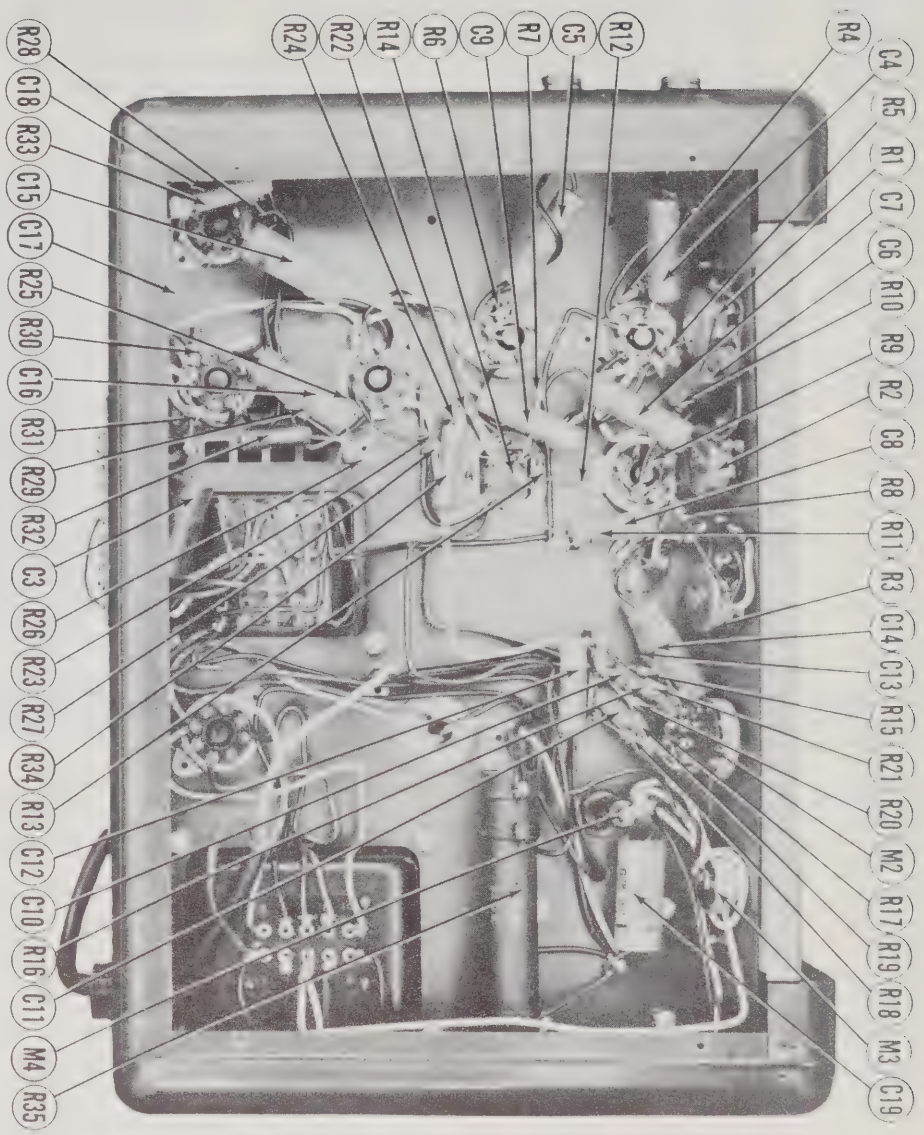
DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					DAVID BOGEN PART No.		
M1	Bayonet	6-8	.15	Brown			Type #47

MISCELLANEOUS

ITEM No.	PART NAME	DAVID BOGEN PART No.	NOTES
M2	Switch		Tone
M3	Switch		On-Off
M4	Fuse		AGC 2 Amp.

CHASSIS—BOTTOM VIEW



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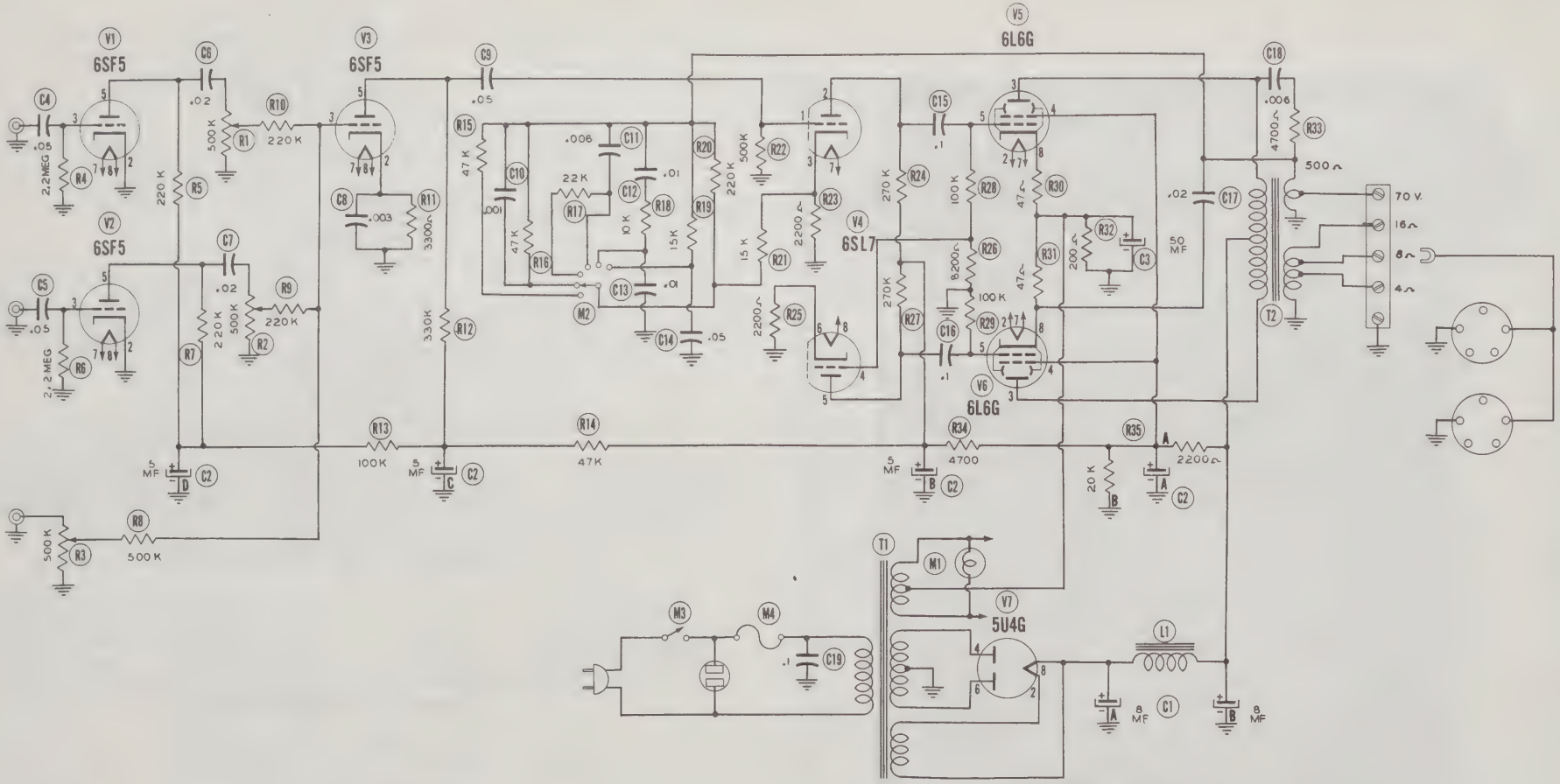
DAVID BOGEN MODEL H30

DAVID BOGEN MODEL H30



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	6SF5	0V	0V	-.6VDC	0V	82VDC	192VDC	#	#
V 2	6SF5	0V	0V	-.7VDC	0V	82VDC	0V	#	#
V 3	6SF5	0V	1.4VDC	0V	0V	117VDC	0V	#	#
V 4	6SL7GT	0V	130VDC	1.8VDC	0V	130VDC	1.8VDC	#	#
V 5	6L6G	0V	#	420VDC	365VDC	.1VDC	0V	#	30VDC
V 6	6L6G	0V	#	420VDC	365VDC	0V	0V	#	30VDC
V 7	5U4G	0V	435VDC	0V	380VAC	0V	380VAC	0V	435VDC

6.3VAC measured across filaments.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	6SF5	0Ω	0Ω	2.2 Meg.	0Ω	†380KΩ	†150KΩ	200Ω	200Ω
V 2	6SF5	0Ω	0Ω	2.2 Meg.	0Ω	†380KΩ	0Ω	200Ω	200Ω
V 3	6SF5	0Ω	3.3KΩ	270KΩ	Inf.	†380KΩ	Inf.	200Ω	200Ω
V 4	6SL7GT	470KΩ	†270KΩ	2.2KΩ	8.2KΩ	†270KΩ	2.2KΩ	200Ω	200Ω
V 5	6L6G	Inf.	200Ω	†150Ω	†2.2KΩ	100KΩ	8.2KΩ	200Ω	200Ω
V 6	6L6G	Inf.	200Ω	†140Ω	†2.2KΩ	100KΩ	Inf.	200Ω	200Ω
V 7	5U4G	Inf.	20KΩ	Inf.	38Ω	Inf.	40Ω	Inf.	20KΩ

† Measured from pin 8 of V7

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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THE COOPERATION OF THE MANUFACTURER OF THIS EQUIPMENT MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

PHOTOFACT* Folder

DEWALD MODELS BT-100, BT-101, CT-101

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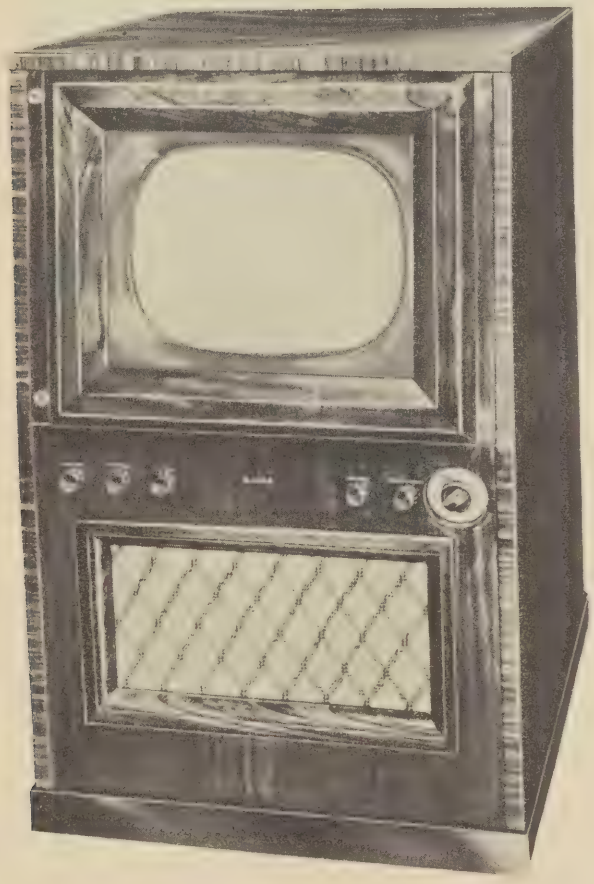

MODEL CT-101

DEWALD MODELS
BT-100, BT-101,
CT-101

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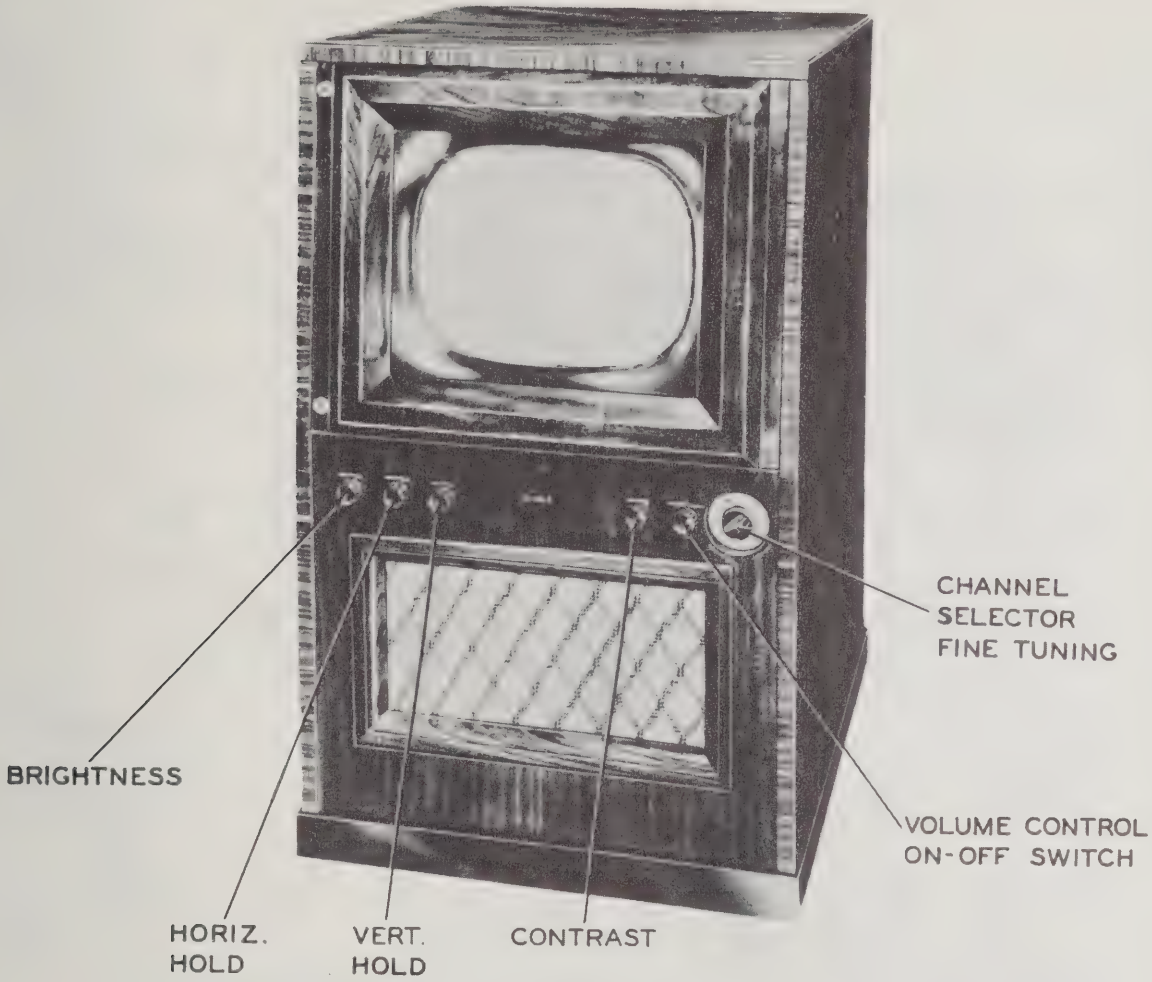

DEWALD
MODELS BT-100, BT-101, CT-101

DEWALD MODEL CT-101

TRADE NAME	Dewald, Models BT-100, BT-101, CT-101
MANUFACTURER	Dewald Radio Mfg., Co., 35-15 37th Ave., Long Island City, New York
TYPE SET	Television Receiver
TUBES	Thirty
POWER SUPPLY	110-120 Volts AC-60 Cycle RATING: 2.28 Amp. @ 117 Volts AC
TUNING RANGE—	Channels 2 thru 13

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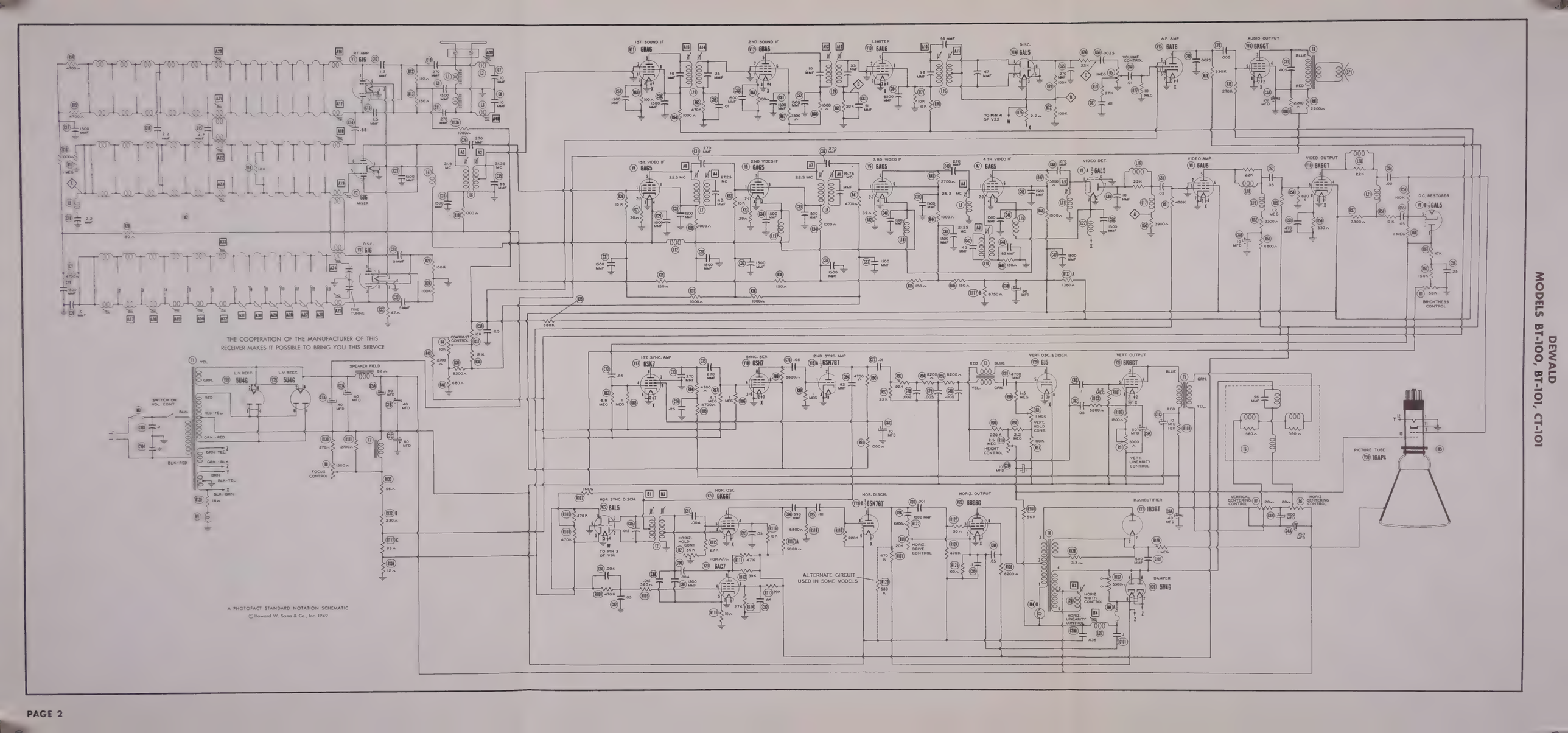
DATE 12/49 SET # 79 FOLDER # 6



DEWALD
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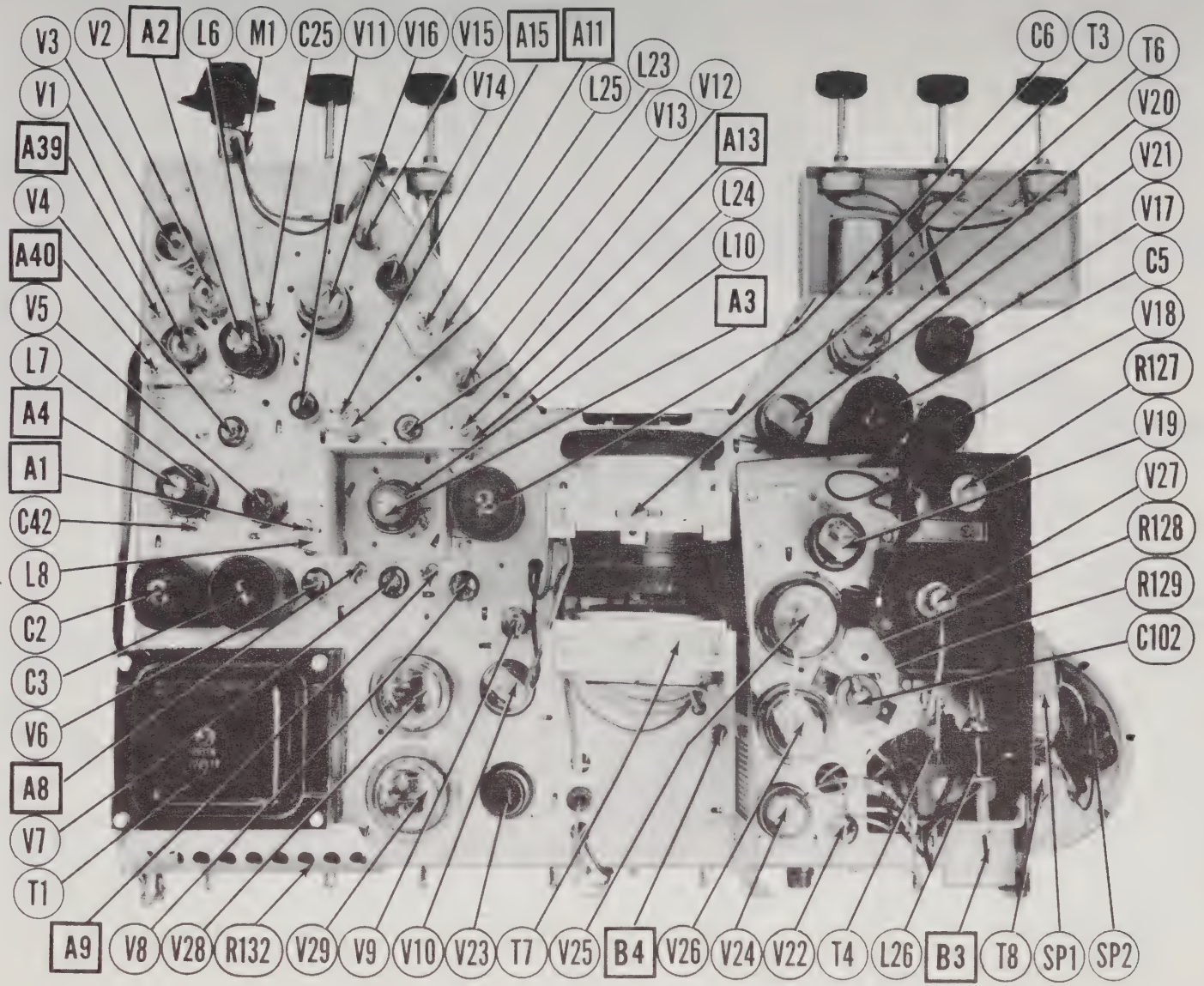
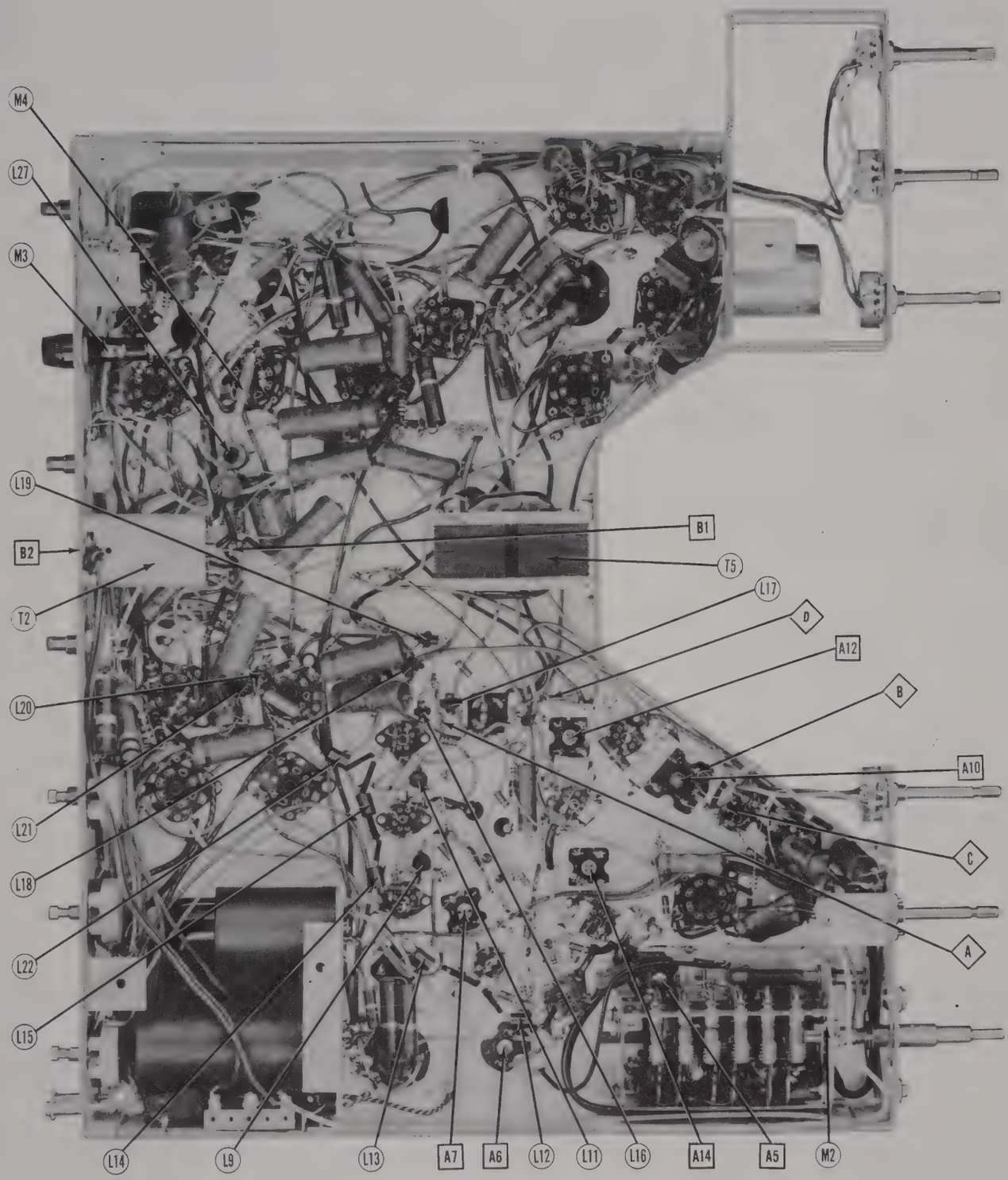
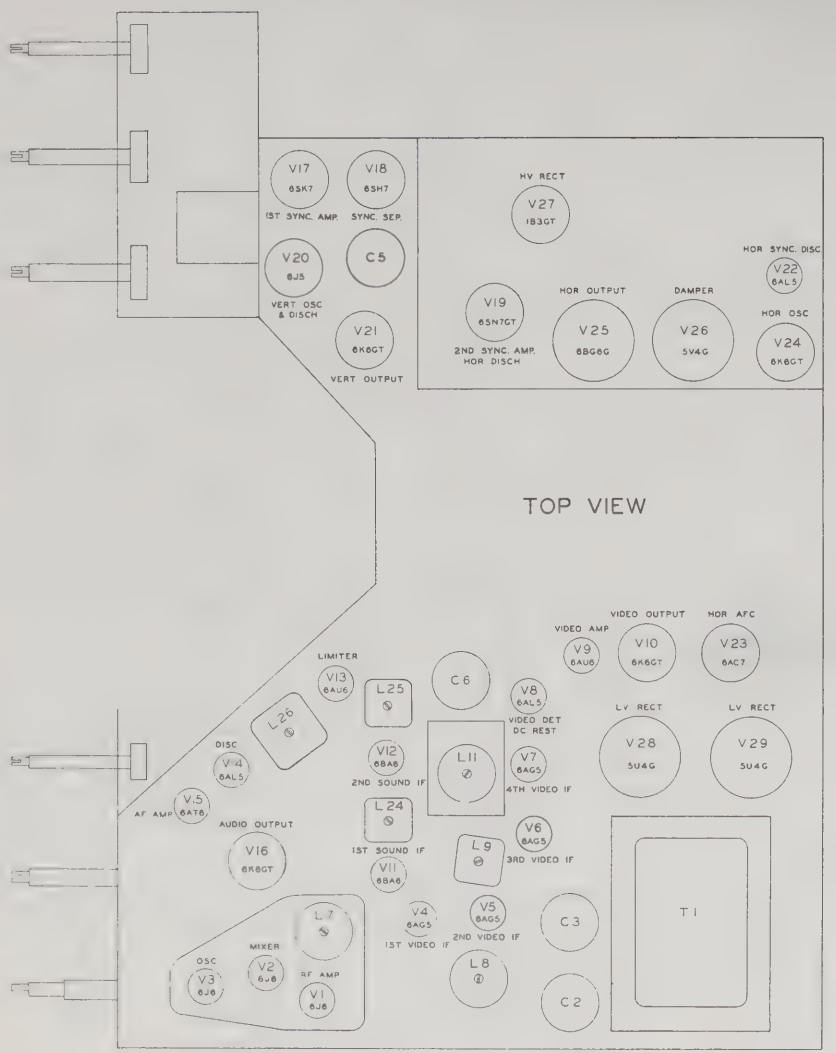
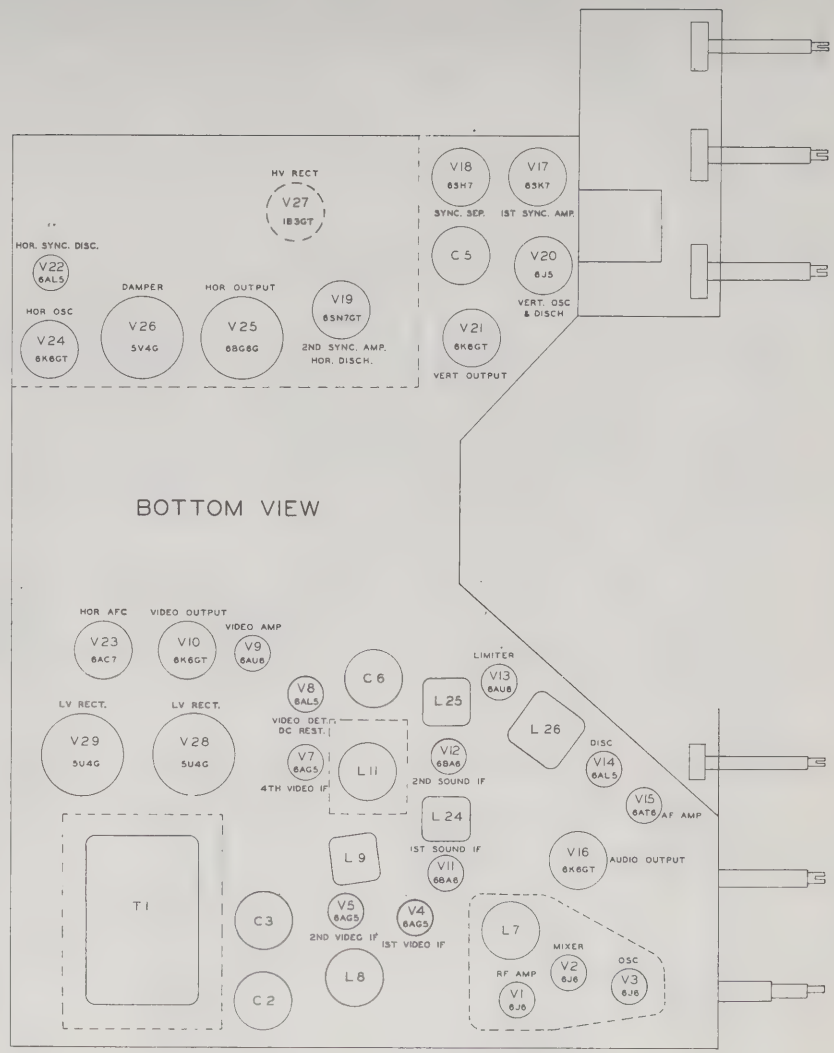


CHASSIS TOP VIEW



CHASSIS BOTTOM VIEW-TRANS., INDUCTOR AND ALIGNMENT IDENTIFICATION





TUBE PLACEMENT CHART

MODELS BT-100, BT-101, CT-101

DEWALD

ALIGNMENT INSTRUCTIONS

PRE – ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

If alignment is performed with picture tube removed, remove V22 from its socket to disable the high voltage supply.

The oscillator tube (V3) should be removed when performing IF adjustments. Use insulated alignment screwdriver for adjusting.

VIDEO IF ALIGNMENT

If receiver is badly misaligned making it impossible to get sufficent reading on VTVM with the signal being fed to the ant. terminals, signal may be fed to the mixer grid. This point is accessible through the hole in the chassis on right side of tuner (Point Ⓕ).

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1				9	DC probe to junction of R40 and R41. Common to chassis.		Set contrast control to give a -3 volt reading. Leave at this setting during entire IF Alignment procedure.
2	Direct	To ant. terminals. (See prealignment notes)	19.75MC	9	DC probe to point Ⓐ. Common to chassis.	A1	Adjust for minimum deflection.
3	Direct	"	21.25MC	9	"	A2	"
4	Direct	"	21.25MC	9	"	A3	"
5	Direct	"	27.25MC	9	"	A4	"
6	Direct	"	21.8MC	9	"	A5	Adjust for maximum deflection.
7	Direct	"	25.3MC	9	"	A6	"
8	Direct	"	22.3MC	9	"	A7	"
9	Direct	"	25.2MC	9	"	A8	"
10	Direct	"	23.4MC	9	"	A9	Adjust for maximum deflection. If A7 required adjustment in Step 8 repeat Step 2. If FM signal gen. is not available continue with Step 12.

OVERALL VIDEO IF ALIGNMENT

Connect the synchronized sweep voltage from the signal generator to the horizontal amplifier in the scope for horizontal deflection.

The waveforms shown may be inverted depending on the number of amplifying stages in the vertical amplifier in the scope being used.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
11	5000 MMF	To dummy mixer tube. (See Fig. 6).	24MC (10MC sweep)	See Fig. 4.	9	Vert. Amp. to Point Ⓐ. Ground to chassis.	A5,A6, A7,A8, A9	Make slight adjustments if necessary to obtain response curve per Fig. 4. If considerable adjustment is required the traps must be realigned.

SOUND IF ALIGNMENT USING VTVM

Do not remove the shield covering the discriminator tube socket during Step 12. Fashion hook on 1 Megohm resistor and make connection to Point Ⓑ through alignment hole in shield.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
12	5000MMF	High side to Pin #1 of 3rd Sound IF (V13). Low side to chassis.	21.25MC	9	DC probe to Point Ⓑ in series with 1 Meg. Common to chassis.	A10	Detune A11. Adjust A10 for maximum deflection.
13	5000MMF	"	"	9	DC probe to Point Ⓒ. Common to chassis	A11	Adjust for zero reading. A positive or negative reading is obtained on either side of correct setting.
14	5000MMF	High side to Pin #1 of 2nd Sound IF (V12). Low side to chassis.	"	9	DC probe to Point Ⓓ. Common to chassis	A12,A13	Adjust for maximum deflection.
15	5000MMF	High side to tap on trap winding of L7. Low side to chassis.	"	9	"	A14, A15	"

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
12	5000MMF	High side to Pin 1 of 3rd Sound IF (V13). Low side to chassis.	21.25MC (600KC sweep)	21.25MC	9	Vertical amp. to Point Ⓒ. Ground to chassis.	A10,A11	Adjust for maximum amplitude of peaks and straightness of diagonal line with marker at center of line.
13	5000MMF	High side to Pin 1 of 2nd Sound IF (V12). Low side to chassis.	"	"	9	Vert. amp. to Point Ⓓ in series with 33KΩ. Ground to chassis.	A12,A13	Adjust for maximum amplitude and symmetry per Fig. 2.
14	5000MMF	High side to tap on trap winding of L7. Low side to chassis.	"	"	9	"	A14,A15	Adjust for maximum amplitude and symmetry per Fig. 3. Continue with Step 16.

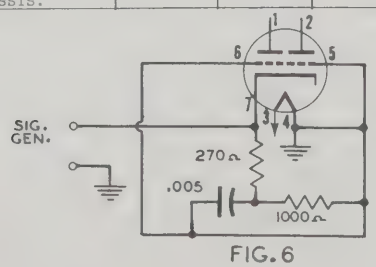


FIG. 6

DUMMY MIXER TUBE

CAREFULLY BEND PIN 7 AT RIGHT ANGLE. CONNECT PINS 5 & 6 TO PIN 4 WHICH IS GROUNDED AT THE SOCKET. CONNECT OTHER COMPONENTS AS SHOWN.

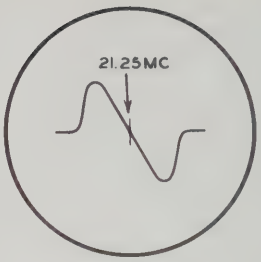


FIG. 1

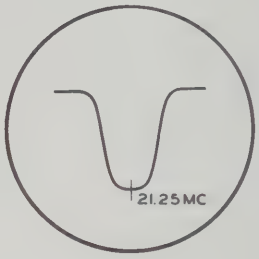


FIG. 2

FIG. 3

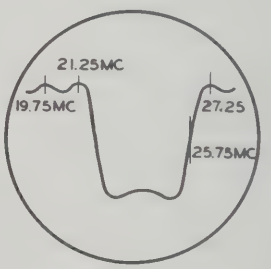


FIG. 4

FIG. 5

RF & MIXER LINE ALIGNMENT

On those models having the RF Grid returned to the contrast control it is necessary to set the bias at -1.5 volts. Connect DC probe of VTVM to pin 5 or 6 of 1st AF Tube (V15), common to chassis and set contrast control for reading of -1.5 volts.

The signal generator output should be terminated with a resistance equal to its output impedance (usually 50 ohms).

These adjustments are usually very stable and alignment should not be attempted unless they are known to be out of alignment.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
16	120Ω carbon res. in series with each lead	To ant. terminals.	177MC (10MC sweep)	175.25MC and 179.75MC	7	Vert. amp. to Point ⊕ in series with 10KΩ. Ground to chassis.	A16,A17, A18,A19	Adjust for approx. flat top response per Fig. 5 with markers above 70%.
17	"	"	183MC (10MC sweep)	181.25MC and 185.75MC	8	"		Check for response curve per Fig. 5.
18	"	"	189MC (10MC sweep)	187.25MC and 191.75MC	9	"		"
19	"	"	195MC (10MC sweep)	193.25MC and 197.75MC	10	"		"
20	"	"	201MC (10MC sweep)	199.25MC and 203.75MC	11	"		"
21	"	"	207MC (10MC sweep)	205.25MC and 209.75MC	12	"		"
22	"	"	213MC (10MC sweep)	211.25MC and 215.75MC	13	"		"

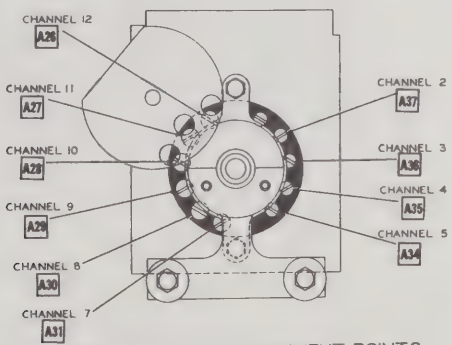
If markers are below 70% on any channel make slight adjustment of A16, A17, A18 and A19 with channel selector on that channel. Recheck the other high band channels.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
23	120Ω carbon res. in series with each lead	To ant. terminals.	85MC (10MC sweep)	83.25MC and 87.75MC	6	Vert. amp. to Point ⊕ in series with 10KΩ. Ground to chassis.	A20,A21 A22,A23	Adjust for approx. flat top response per Fig. 5 with markers above 70%.
24	"	"	79MC (10MC sweep)	77.25MC and 81.75MC	5	"		Check for response curve per Fig. 5.
25	"	"	69MC (10MC sweep)	67.25MC and 71.75MC	4	"		"
26	"	"	63MC (10MC sweep)	61.25MC and 65.75MC	3	"		"
27	"	"	57MC (10MC sweep)	55.25MC and 59.75MC	2	"		"

If markers are below 70% on any channel make slight adjustments of A20, A21, A22 and A23 with channel selector on that channel. Recheck the other low band channels.

OSCILLATOR ALIGNMENT

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
28	2 - 120Ω carbon res.	To ant. terminals.	215.75MC	13	DC probe to Point ⊕ .Common to chassis.	A24,A25	Adjust for zero reading. A positive and negative reading is obtained on either side of correct setting. Keep A24 and A25 slugs at approx. the same relative setting.
29	"	"	209.75MC	12	"	A26	Adjust for zero reading as above.
30	"	"	203.75MC	11	"	A27	"
31	"	"	197.75MC	10	"	A28	"
32	"	"	191.75MC	9	"	A29	"
33	"	"	185.75MC	8	"	A30	"
34	"	"	179.75MC	7	"	A31	"
35	"	"	87.75MC	6	"	A32,A33	Adjust for zero reading keeping A32 and A33 slugs at approx. the same relative position.
36	"	"	81.75MC	5	"	A34	Adjust for zero reading.
37	"	"	71.75MC	4	"	A35	" " " "
38	"	"	65.75MC	3	"	A36	" " " "
39	"	"	59.75MC	2	"	A37	" " " "



RF OSCILLATOR ALIGNMENT POINTS

VOLTAGE AND RESISTANCE MEASUREMENTS

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6J6	80VDC	80VDC	6.3VAC	0V	-.3VDC	-.3VDC	0V		
V 2	6J6	87VDC	87VDC	6.3VAC	0V	-1.4VDC	-1.7VDC	0V		
V 3	6J6	90VDC	48VDC	6.3VAC	0V	§-4.4VDC	§-4.7VDC	.2VDC		
V 4	6AG5	-1.1VDC	.1VDC	0V	6.3VAC	100VDC	100VDC	.1VDC		
V 5	6AG5	-1.1VDC	.2VDC	6.3VAC	0V	100VDC	100VDC	.2VDC		
V 6	6AG5	-1.1VDC	.2VDC	6.3VAC	0V	92VDC	105VDC	.2VDC		
V 7	6AG5	0V	1.3VDC	6.3VAC	0V	65VDC	110VDC	1.3VDC		
V 8	6AL5	0V	#.1VDC	6.3VAC	0V	#.5VDC	0V	-.2VDC		
V 9	6AU6	-.7VDC	0V	0V	6.3VAC	260VDC	117VDC	0V		
V 10	6K6GT	0V	0V	95VDC	117VDC	-2.4VDC	0V	6.3VAC	2.7VDC	
V 11	6BA6	0V	0V	0V	6.3VAC	105VDC	105VDC	1.3VDC		
V 12	6BA6	0V	0V	0V	6.3VAC	105VDC	105VDC	1.3VDC		
V 13	6AU6	-.4VDC	0V	0V	6.3VAC	45VDC	40VDC	0V		
V 14	6AL5	0V	-.5VDC	4.9VAC	0V	0V	0V	-.5VDC		
V 15	6AT6	-.6VDC	0V	0V	6.3VAC	0V	0V	85VDC		
V 16	6K6GT	4.4VAC	6.3VAC	250VDC	260VDC	-9.2VDC	0V	0V	0V	
V 17	6SK7	0V	0V	0V	-.9VDC	0V	107VDC	6.3VAC	210VDC	
V 18	6SH7	0V	0V	0V	-1.6VDC	0V	115VDC	6.3VAC	115VDC	
V 19	6SN7GT	-.7VDC	75VDC	0V	# -32.5VDC	#75VDC	#0V	6.3VAC	0V	
V 20	6J5	0V	0V	#90VDC #350VDC	#0V	#-30VDC	#-3.8VDC	6.3VAC	#0V	
V 21	6K6GT	0V	6.3VAC	#260VDC	#260VDC	#0V	#0V #30VDC	0V	#24VDC #43VDC	
V 22	6AL5	-.8VDC	-4VDC	0V	4.9VAC	-2.3VDC	0V	-5.7VDC		
V 23	6AC7	0V	0V	0V	-1.1VDC	0V	95VDC	6.3VAC	230VDC	
V 24	6K6GT	-1.1VDC	0V	185VDC	215VDC	-25VDC	350VDC	6.3VAC	.2VDC	
V 25	6BG6G	0V	6.3VAC	#10VDC	#-3.2VDC	#3.2VDC	0V	0V	260VDC	TOP CAP *
V 26	5V4G	0V	360VDC	-19VDC	280VDC	0V	280VDC	0V	360VDC	
V 27	1B3GT	* DO NOT MEASURE								
V 28	5U4G	0V	300VDC	0V	365VAC	0V	365VAC	0V	300VDC	
V 29	5U4G	0V	300VDC	0V	365VAC	0V	365VAC	0V	300VDC	
V 30	16AP4	0V	#.6VDC	PIN 10 335VDC	PIN 11 0V	PIN 12 6.3VAC				

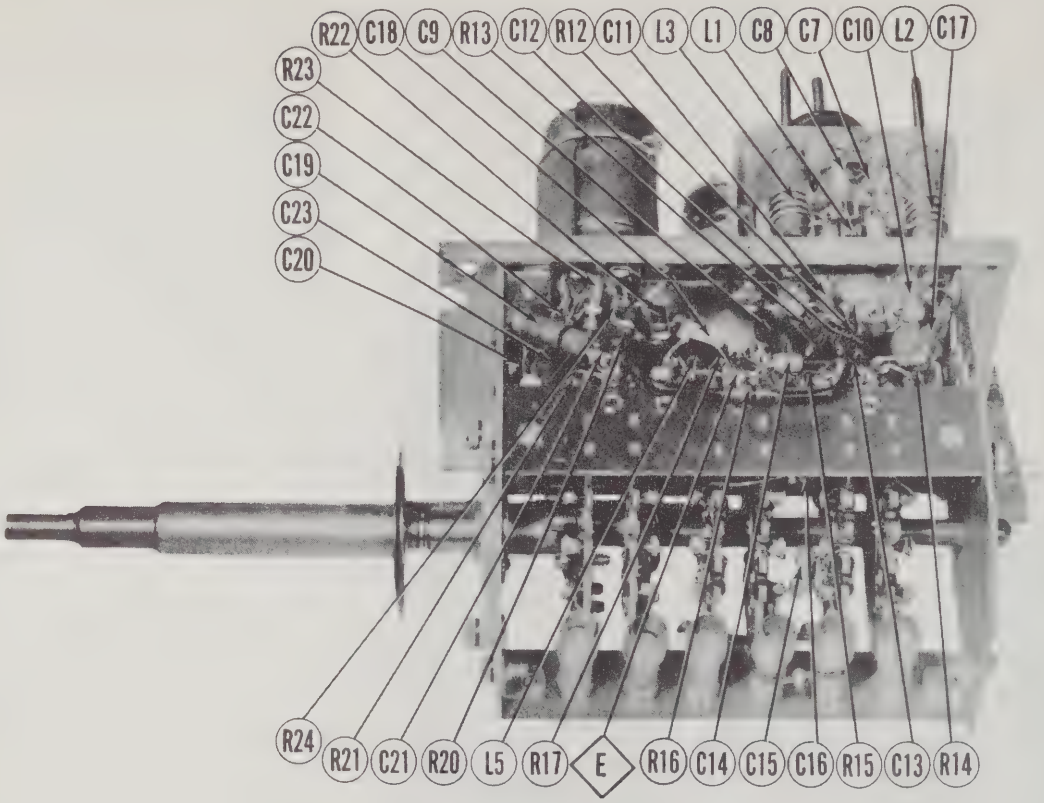
§ Taken with vacuum tube voltmeter.
# Measured from pin 6 of V19
Note: Contrast control set at maximum for these measurements.

RESISTANCE READINGS

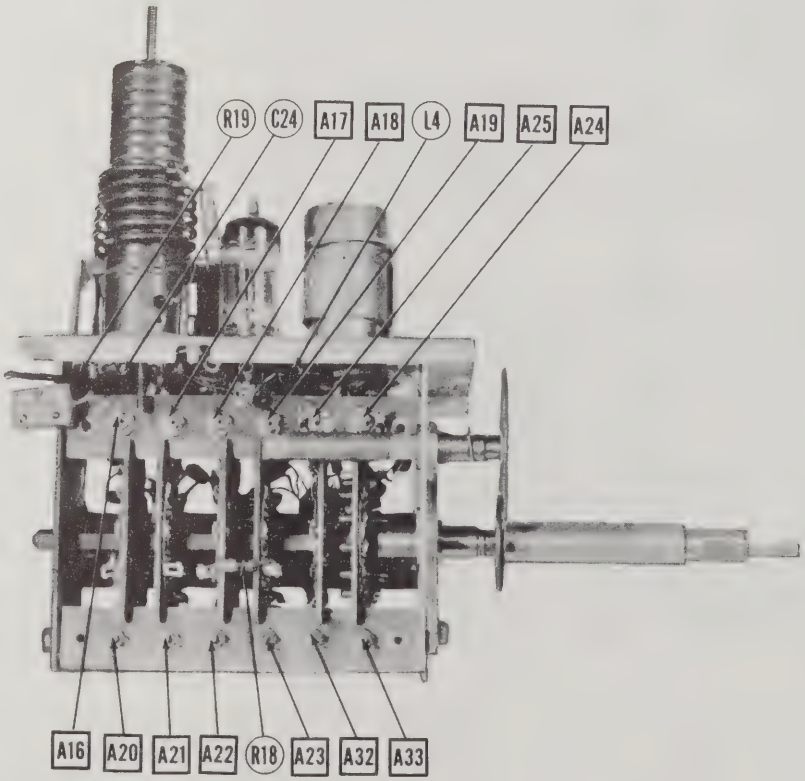
Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6J6	†6.5KΩ	†6.5KΩ	.1Ω	0Ω	14KΩ	14KΩ	0Ω		
V 2	6J6	†3KΩ	†3KΩ	.1Ω	0Ω	1 Meg.	1 Meg.	0Ω		
V 3	6J6	†7KΩ	†7KΩ	.1Ω	0Ω	100KΩ	100KΩ	47Ω		
V 4	6AG5	20KΩ	30Ω	0Ω	.1Ω	†3KΩ	†3KΩ	30Ω		
V 5	6AG5	19KΩ	39Ω	.1Ω	0Ω	†3KΩ	†3KΩ	39Ω		
V 6	6AG5	13KΩ	39Ω	.1Ω	0Ω	†5.5KΩ	†2.5KΩ	39Ω		
V 7	6AG5	.1Ω	150Ω	.1Ω	0Ω	†9KΩ	†2.5KΩ	150Ω		
V 8	6AL5	.1Ω	200KΩ	.1Ω	0Ω	1.2Meg.	0Ω	4KΩ		
V 9	6AU6	470KΩ	0Ω	0Ω	.1Ω	†10KΩ	†1.5KΩ	0Ω		
V 10	6K6GT	0Ω	0Ω	†4.8KΩ	†1.5KΩ	500KΩ	Inf.	.1Ω	330Ω	
V 11	6BA6	0Ω	0Ω	0Ω	.1Ω	†2.5KΩ	†2.5KΩ	100Ω		
V 12	6BA6	470KΩ	0Ω	0Ω	.1Ω	†2.5KΩ	†5KΩ	100Ω		
V 13	6AU6	22KΩ	0Ω	0Ω	.1Ω	†8KΩ	†8KΩ	0Ω		
V 14	6AL5	200KΩ	100KΩ	1.5Ω	0Ω	0Ω	0Ω	100KΩ		
V 15	6AT6	10Meg.	0Ω	0Ω	.1Ω	12KΩ	12KΩ	†330KΩ		
V 16	6K6GT	5Ω	.1Ω	†1.5KΩ	†1000Ω	270KΩ	100KΩ	0Ω	0Ω	
V 17	6SK7	0Ω	0Ω	0Ω	1 Meg.	0Ω	†2.5KΩ	.1Ω	†11KΩ	
V 18	6SH7	0Ω	0Ω	0Ω	1 Meg.	0Ω	†1.5KΩ	.1Ω	†8.5KΩ	
V 19	6SN7GT	1 Meg.	†7.5KΩ	0Ω	220KΩ	†680KΩ	500Ω	.1Ω	0Ω	
V 20	6J5	0Ω	0Ω	†1.4Meg. †290KΩ	70KΩ	2.5Meg.	1 Meg.	.1Ω	500Ω	
V 21	6K6GT	Inf.	.1Ω	†10KΩ	†10KΩ	2.2Meg.	5KΩ 500Ω	0Ω	7KΩ 2.5KΩ	
V 22	6AL5	1 Meg.	1.5Meg.	0Ω	1.5Ω	12Ω	0Ω	1.5Meg.		
V 23	6AC7	0Ω	0Ω	0Ω	1.5Meg.	10Ω	†20KΩ	.1Ω	†20KΩ	
V 24	6K6GT	1.5Meg.	0Ω	†5KΩ	†10KΩ	80KΩ	†7KΩ	.1Ω	10Ω	
V 25	6BG6G	Inf.	.1Ω	#100Ω	470KΩ	470KΩ	Inf.	0Ω	†6.5KΩ	TOP CAP †6.5KΩ
V 26	5V4G	Inf.	†6.5KΩ	470KΩ	†70Ω	Inf.	†70Ω	Inf.	†6.5KΩ	
V 27	1B3GT	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	TOP CAP †6.5KΩ
V 28	5U4G	Inf.	6KΩ	Inf.	500Ω	Inf.	500Ω	Inf.	6KΩ	
V 29	5U4G	Inf.	6KΩ	Inf.	500Ω	Inf.	500Ω	Inf.	6KΩ	
V 30	16AP4	0Ω	1.3Meg.	PIN 10 56KΩ	PIN 11 0Ω	PIN 12 .1Ω				

† Measured from pin 8 of V28
# Measured from pin 6 of V19

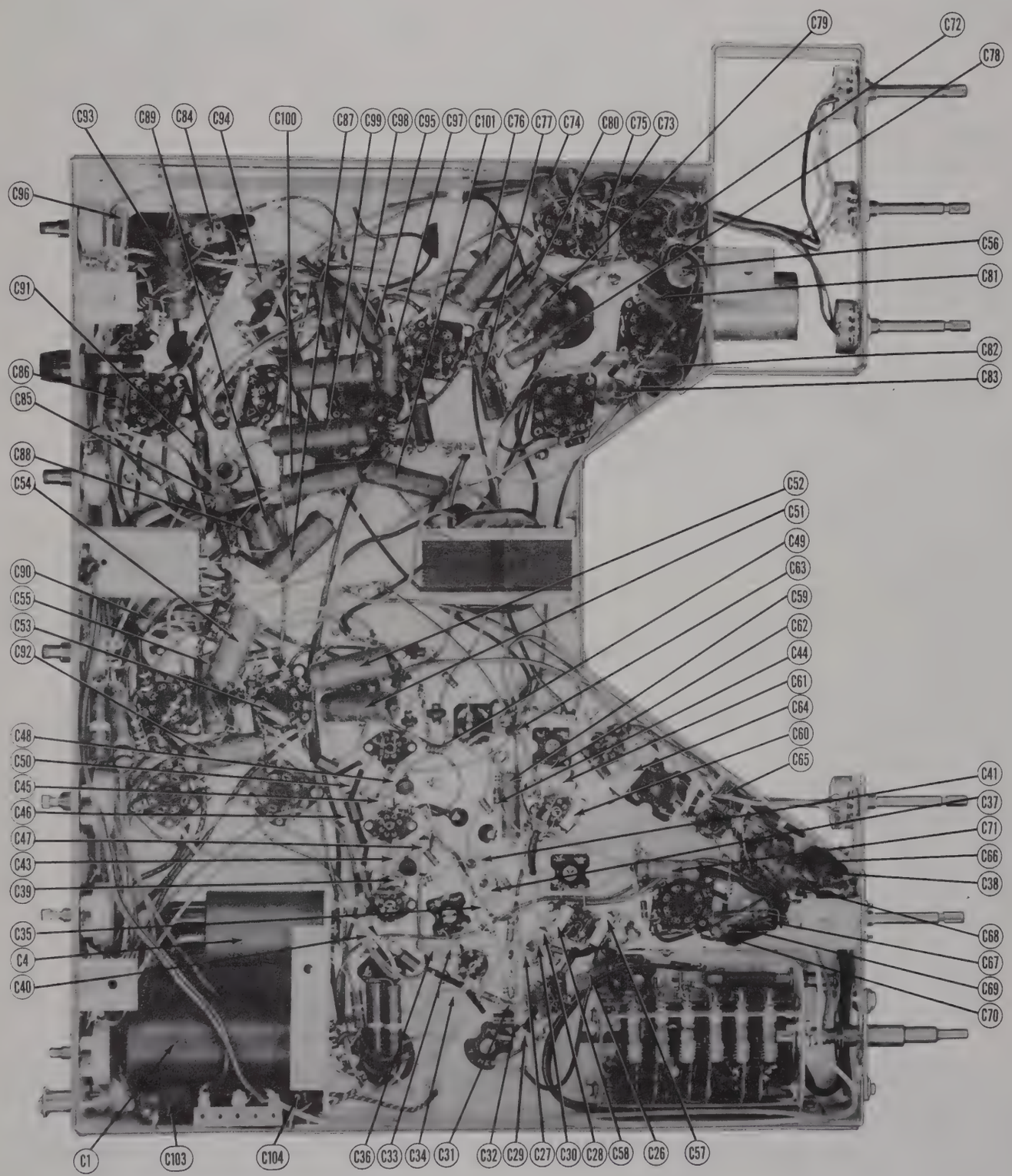
1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltage measured at 1,000 ohms.
2. Pin numbers are counted in a clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings.
5. Front panels controls set at minimum.
6. Where readings may vary according to the setting of the service controls, both minimum and maximum readings are given.



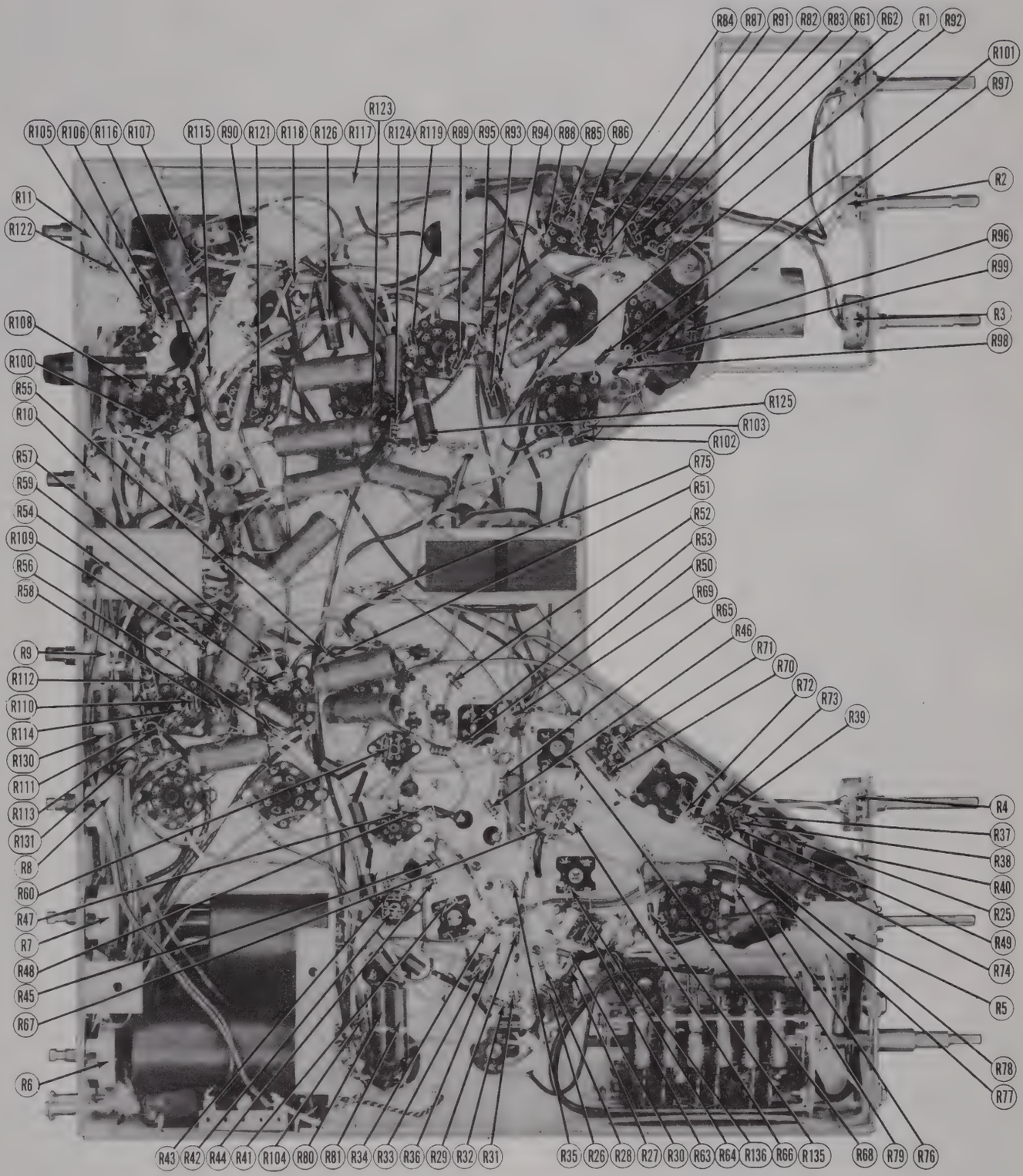
RF TUNER-RIGHT SIDE



RF TUNER-LEFT SIDE



CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION



CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA. BASE TYPE	NOTES
		DEWALD PART No.	STANDARD REPLACEMENT		
V1	RF Amp.	6J6	6J6	7BF	
V2	Mixer	6J6	6J6	7BF	
V3	Oscillator	6J6	6J6	7BF	
V4	1st Video IF	6AG5	6AG5	7BD	
V5	2nd Video IF	6AG5	6AG5	7BD	
V6	3rd Video IF	6AG5	6AG5	7BD	
V7	4th Video IF	6AG5	6AG5	7BD	
V8	Video Det.-DC Restorer	6AL5	6AL5	6BT	
V9	Video Amp.	6AU6	6AU6	7BK	
V10	Video Output	6K6GT	6K6GT	7S	
V11	1st Sound IF	6BA6	6BA6	7BK	
V12	2nd Sound IF	6BA6	6BA6	7BK	
V13	Limiter	6AU6	6AU6	7BK	
V14	Disc.	6AL5	6AL5	6BT	
V15	AF Amp.	6AT6	6AT6	7BT	
V16	Audio Output	6K6GT	6K6GT	7S	
V17	1st Sync. Amp.	6SK7	6SK7	8N	
V18	Sync. Sep.	6SH7	6SH7	8BK	
V19	2nd Sync. Amp.-Hor. Disch.	6SN7GT	6SN7GT	8BD	
V20	Vert. Osc. & Disch.	6J5	6J5	6Q	
V21	Vert. Output	6K6GT	6K6GT	7S	
V22	Hor. Sync. Disc.	6AL5	6AL5	6BT	
V23	Hor. AFC	6AC7	6AC7	8N	
V24	Hor. Osc.	6K6GT	6K6GT	7S	
V25	Hor. Output	6BG6G	6BG6G	5BT	
V26	Damper	5V4G	5V4G	5L	
V27	HV Rectifier	1B3GT	1B3GT	3C	
V28	LV Rectifier	5U4G	5U4G	5T	
V29	LV Rectifier	5U4G	5U4G	5T	
V30A	Picture Tube	16AP4	16AP4	12D	Used in CT-101
B	Picture Tube	10BP4	10BP4	12D	Used in BT-100, BT-101

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA					IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	DEWALD PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	
C1A	40	450	2025-4	AFH882J	UP9CJ897		TVL-30	◓ Filter
B	40	450						■ Filter
C	10	450						▲ Vert. Output Dec.
C2A	40	450	2025-3	AFH82J16D	UP9CJ729		TVL-25	◓ Filter
B	10	450						■ Vert. Osc. Dec.
C	80	150						▲ Filter
C3A	20	450	2025-1	AF164J	UP9BJ337		TVL-16	◓ Filter
B	80	350						▲ Filter
C4A	250	10	2025-6	PRS12/250	UP7BJ808		TVL-56	◓ Hor. Cent. Cont. Bypass
B	1000	6		PRS6/1000				▲ Vert. Cent. Cont. Bypass
C5A	80	450	2025-5	AF16J	UP9BJ730		TVL-18	◓ Filter
B	50	50		PRS50/50				▲ Vert. Output Cath. Bypass
C6A	40	450	2025-2	AF4444J§	UP9CJ731		TVL-53	◓ Filter
B	10	450						■ Low Pass Filter
C	10	350						▲ Decoupling
C7	10					NPOK-10		Fixed Trimmer
C8	10					NPOK-10		Fixed Trimmer
C9	1500					GP2L-0015		RF Bypass
C10	270					GP2K-270		RF Coupling
C11	270					GP2K-270		RF Coupling
C12	1.5					NPOK-1.5		Neutralizing
C13	1.5					NPOK-1.5		Neutralizing
C14	.68							RF Coupling
C15	4.7					NPOK-4.7		RF Coupling
C16	2.2							RF Coupling
C17	1500					GP2L-0015		RF Decoupling
C18	22					GP1K-22		Fixed Trimmer
C19	1500					GP2L-0015		Osc. Decoupling
C20	10					NPOK-10		Fixed Trimmer
C21	5					NPOK-5		Osc. Feedback
C22	5					NPOK-5		Osc. Feedback
C23	1500					GP2L-0015		Filament Bypass
C24	1500					GP2L-0015		Mixer Decoupling
C25	68							Fixed Trimmer
C26	270	500		1468-00025	5W5T25	GP2K-270	1FM-325	IF Coupling
C27	1500			1467-0015	1W5D15	GP2L-0015	1FM-215	Bias Filter
C28	1500			1467-0015	1W5D15	GP2L-0015	1FM-215	1st V. IF Decoupling
C29	1500			1467-0015	1W5D15	GP2L-0015	1FM-215	1st V. IF Fil. Bypass
C30	1500			1467-0015	1W5D15	GP2L-0015	1FM-215	Decoupling
C31	270	500		1468-00025	5W5T25	GP2K-270	1FM-325	IF Coupling
C32	1500			1467-0015	1W5D15	GP2L-0015	1FM-215	Bias Filter
C33	1500			1467-0015	1W5D15	GP2L-0015	1FM-215	2nd V. IF Decoupling
C34	1500			1467-0015	1W5D15	GP2L-0015	1FM-215	2nd V. IF Fil. Bypass
C35	1500			1467-0015	1W5D15	GP2L-0015	1FM-215	Decoupling
C36	270	500		1468-00025	5W5T25	GP2K-270	1FM-325	IF Coupling
C37	1500			1467-0015	1W5D15	GP2L-0015	1FM-215	Bias Filter
C38	.25	200		P488-25	GT2P25		TC-2	Bias Filter
C39	1500			1467-0015	1W5D15	GP2L-0015	1FM-215	3rd V. IF Decoupling
C40	1500			1467-0015	1W5D15	GP2L-0015	1FM-215	3rd V. IF Fil. Bypass
C41	1500			1467-0015	1W5D15	GP2L-0015	1FM-215	Decoupling
C42	43							Fixed Trimmer
C43	270	500		1468-00025	5W5T25	GP2K-270	1FM-325	IF Coupling
C44	82			1468-0001	5W5T1	GP1K-100	1FM-31	4th V. IF Cath. Bypass
C45	1500			1467-0015	1W5D15	GP2L-0015	1FM-215	4th V. IF Decoupling
C46	1500			1467-0015	1W5D15	GP2L-0015	1FM-215	4th V. IF Fil. Bypass
C47	1500			1467-0015	1W5D15	GP2L-0015	1FM-215	RF Bypass
C48	270	500		1468-00025	5W5T25	GP2K-270	1FM-325	IF Coupling
C49	10			1468-00001	5W5J1	GP1K-10	MS-41	V. Diode Filter
C50	1500			1467-0015	1W5D15	GP2L-0015	1FM-215	V. Det. Fil. Bypass
C51	.05	600		P688-05	GT6S5		TM-15	Video Coupling
C52	.05	600		P688-05	GT6S5		TM-15	Video Coupling

PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS (CONT.)

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA DEWALD PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C53	470	500		1468-0005	5W5T5	GP2K-470	1FM-35	V. Output Cath. Bypass
C54	.05	600		P688-05	GT6S5		TM-15	Video Coupling
C55	.05	600		P688-05	GT6S5		TM-15	Video Coupling
C56	.25	200		P488-25	GT2P25		TC-2	Brightness Cont. Byp.
C57	1500			1467-0015	1W5D15	GP2L-0015	1FM-215	1st S. IF Cath. Bypass
C58	1500			1467-0015	1W5D15	GP2L-0015	1FM-215	1st S. IF Decoupling
C59	1500			1467-0015	1W5D15	GP2L-0015	1FM-215	2nd S. IF Grid Filter
C60	1500			1467-0015	1W5D15	GP2L-0015	1FM-215	2nd S. IF Cath. Bypass
C61	1500			1467-0015	1W5D15	GP2L-0015	1FM-215	2nd S. IF Screen Byp.
C62	1500			1467-0015	1W5D15	GP2L-0015	1FM-215	2nd S. IF Plate Dec.
C63	51			1468-00005	5W5S5	GP1K-51	1FM-45	3rd S. IF Grid Filter
C64	6500			1467-006	1D5D6	GP2-334-0068	1FM-27	3rd S. IF Decoupling
C65	270	500		1468-00025	5W5T25	GP2K-270	1FM-325	RF Bypass
C66	.0025	600		P688-0022	GT6D25	GP2M-0025	TM-23	Audio Coupling
C67	.01	600		P688-01	GT6S1	GP2-335-01	TM-11	Tone Comp.
C68	.01	600		P688-01	GT6S1	GP2-335-01	TM-11	Audio Coupling
C69	.0025	600		P688-0022	GT6D25	GP2M-0025	TM-23	De-emphasis
C70	.005	600		P688-005	GT6D5	GP2M-005	TM-25	Audio Coupling
C71	.005	600		P688-005	GT6D5	GP2M-005	TM-25	Output Plate Bypass
C72	.05	600		P688-05	GT6S5		TM-15	Sync. Coupling
C73	270	500		1468-00025	5W5T25	GP2K-270	1FM-325	1st Sync. Amp. Plate Byp.
C74	.25	200		P488-25	GT2P25		TC-2	1st Sync. Amp. Plate Dec.*
C75	270	500		1468-00025	5W5T25	GP2K-270	1FM-325	Sync. Coupling
C76	.05	600		P688-05	GT6S5		TM-15	Sync. Coupling
C77	.01	600		P688-01	GT6S1	GP2-335-01	TM-11	Sync. Coupling
C78	.002	600		P688-002	GT6D2	GP2M-002	TM-22	Integrator Net.
C79	.005	600		P688-005	GT6D5	GP2M-005	TM-25	Integrator Net.
C80	.005	600		P688-005	GT6D5	GP2M-005	TM-25	Integrator Net.
C81	4700	500		1467-005	1D5D5	GP2M-0047	1FM-25	Vert. Osc. Grid Cap.
C82	.05	600		P688-05	GT6S5		TM-15	Vert. Discharge
C83	.1	400		P488-1	GT4P1		TM-1	Vert. Sweep Coupling
C84	82	500						Sync. Coupling
C85	.015	600		P688-015	GT6S15			Fixed Trimmer
C86	.004	600		P688-004	GT6D4		TM-24	AFC Filter
C87	.05	600		P688-05	GT6S5		TM-15	AFC Filter
C88	.015	600		P688-015	GT6S15			Phase Shifter
C89	1200	500				GP2L-0012		Phase Shifter †
C90	.004	600		P688-004	GT6D4		TM-24	AFC Coupling
C91	.004	600		P688-004	GT6D4		TM-24	Hor. Osc. Grid Cap.
C92	.05	600		P688-05	GT6S5		TM-15	AFC Screen Bypass
C93	.05	600		P688-05	GT6S5		TM-15	Hor. Osc. Screen Bypass
C94	390	500		1468-0004	5W5T4	GP2K-390	1FM-34	Differentiator Net.
C95	.01	600		P688-01	GT6S1	GP2-335-01	TM-11	Hor. Sweep Coupling
C96	1000	500		1468-001	1W5D1	GP2L-001	1FM-21	Hor. Discharge ‡
C97	.001	600		P688-001	GT6D1	GP2L-001	TM-21	Hor. Sweep Coupling
C98	.05	600		P688-05	GT6S5		TM-15	Hor. Output Screen Bypass
C99	.1	400		P488-1	GT4P1		TM-1	Hor. Output Cath. Bypass
C100	.035	600		P688-033				Damper Filter
C101	.1	600		P688-1	GT6P1		TM-1	Damper Filter
C102	500	10000	2031-2					HV Filter
C103	.01	400		P488-01	GT4S1	GP2-335-01	TM-11	Line Filter
C104	.01	400		P488-01	GT4S1	GP2-335-01	TM-11	Line Filter

* Some models use .1MFD in this application.
† Not used in all models.
‡ Some models use 680MMF in this application.
§ Parallel sections to obtain desired capacity.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA DEWALD PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
R1A	50KΩ	½	3025D-4	Q11-123	AM-44-S	Brightness Control
B	Shaft		Not Req.	Not Req.	KSS-3	Attach to R1A Per Instructions
R2A	50KΩ	½	3025D-5	Q11-123	AM-44-S	Horiz. Hold Control (R2 and R3 is dual control on BT100 and BT101)
B	Shaft		Not Req.	Not Req.	KSS-3	Attach to R2A per Instructions
R3A	1 Meg.	½	3025D-13	Q11-137	AM-61-S	Vert. Hold Control
B	Shaft		Not Req.	Not Req.	KSS-3	Attach to R3A Per Instructions
R4A	10KΩ	½	3025D-12	Q11-116	AM-27-S	Contrast Control (R4 and R5 is dual control on BT100 and BT101)
B	Shaft		Not Req.	Not Req.	KSS-3	Attach to R4A Per Instructions
R5A	1 Meg.	½	3025D-1	Q18-137X	AT-103	Volume Control, tapped ⓐ 125KΩ
B	Shaft		Not Req.	Not Req.	KSS-3	Attach to R5A Per Instructions
C	Switch		Not Req.	76-1	SW-A	Attach to R5A Per Instructions
R6	20Ω	2	3025-10	W-20	58-20	Horiz. Centering Control, Wire Wound
R7	20Ω	2	3025-11	W-20X10	58-20 CT	Vert. Centering Control, tapped ⓐ 10Ω
R8	1500Ω	2	3025-9		10-1500	Focus Control, Wire Wound
R9	5000Ω	½	3025D-8	Q11-114	M-19-S	Vert. Linearity Control
R10	2.5 Meg.	½	3025D-7	Q11-239	M-84-S	Height Control
R11	20KΩ	½	3025D-6	Q11-119	M-36-S	Horiz. Drive Control

RESISTORS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA DEWALD PART No.	IRC PART No.	IDENTIFICATION CODES ALL RESISTORS ARE ± 10% UNLESS OTHERWISE STATED
R12	150Ω	½			RF Grid
R13	150Ω	½			RF Grid
R14	4700Ω	½		BTS-4700	RF Plate
R15	4700Ω	½		BTS-4700	RF Plate
R16	1000Ω 20%	½		BTS-1000	RF Decoupling
R17	1 Meg.	½			Mixer Grid
R18	10KΩ	½		BTS-10K	Mixer Grid Shunt
R19	1000Ω	½		BTS-1000	Mixer Decoupling
R20	150Ω	½			Decoupling Network
R21	4700Ω	½			Osc. Plate
R22	47Ω	½			Osc. Cathode
R23	100KΩ	½			Osc. Grid
R24	100KΩ	½			Osc. Grid
R25	680KΩ	½		BTS-680K	Voltage Divider
R26	10KΩ	½			1st Video IF Grid
R27	30Ω	½			1st Video IF Cathode See Note 1
R28	1000Ω	½		BTS-1000	1st Video IF Decoupling

RESISTORS (CONT.)

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA DEWALD PART No.	IRC PART No.	IDENTIFICATION CODES
R29	150Ω	½			Decoupling Network
R30	150Ω	½			Decoupling Network
R31	1000Ω	½		BTS-1000	Bias Network
R32	10KΩ	½			2nd Video IF Grid
R33	39Ω	½			2nd Video IF Cathode
R34	1000Ω	½		BTS-1000	2nd Video IF Decoupling
R35	150Ω	½			Decoupling Network
R36	1000Ω	½		BTS-1000	Bias Network
R37	10KΩ	½		BTS-10K	Bias Network
R38	18KΩ	½		BTS-18K	Bias Network
R39	8200Ω	½		BTS-8200	Bias Network
R40	680Ω 20%	½		BTS-680	Voltage Divider
R41	47Ω	½			3rd Video IF Grid
R42	39Ω	½			3rd Video IF Cathode
R43	2700Ω 20%	½		BTS-2700	3rd Video IF Plate
R44	1000Ω	½		BTS-1000	3rd Video IF Decoupling
R45	150Ω	½			Decoupling Network
R46	15Ω	½			4th Video IF Cathode
R47	560Ω	½			4th Video IF Plate
R48	1000Ω	½		BTS-1000	4th Video IF Decoupling
R49	2700Ω 20%	½		BTS-2700	Bias Voltage Divider
R50	3900Ω	½		BTS-3900	Video Det. Diode Load
R51	470KΩ	½		BTS-470K	Video Amp. Grid
R52	3300Ω	½		BTS-3300	Video Amp. Plate
R53	6800Ω	½		BTS-6800	Low Pass Filter
R54	820KΩ	½		BTS-820K	Video Output
R55	1.2 Meg.	½		BTS-1.2 Meg.	Bias Network
R56	33Ω	½		BW-½-330	Video Output Cathode
R57	3300Ω	1		BTA-3300	Video Output Plate
R58	10KΩ	½		BTS-10K	Phase Correction
R59	100KΩ	½		BTS-100K	Picture Tube Grid
R60	1 Meg.20%	½		BTS-1 Meg.	DC Rest. Diode Load
R61	47KΩ	½		BTS-47K	Voltage Divider
R62	150KΩ	½		BTS-150K	Voltage Divider
R63	100Ω	½			1st Sound IF Cathode
R64	1000Ω	½		BTS-1000	1st Sound IF Decoupling
R65	470KΩ	½		BTS-470K	2nd Sound IF Grid
R66	100Ω	½			2nd Sound IF Cathode
R67	3300Ω	½		BTS-3300	2nd Sound IF Screen
R68	1000Ω	½		BTS-1000	2nd Sound IF Plate Decoupling
R69	22KΩ	½		BTS-22K	Limiter Grid
R70	10KΩ	1			Limiter Decoupling
R71	10KΩ	½		BTS-10K	Voltage Divider
R72	100KΩ	½		BTS-100K	Disc. Diode Load
R73	100KΩ	½		BTS-100K	Disc. Diode Load
R74	22KΩ	½		BTS-22K	De-emphasis
R75	2.2Ω	½		BW-½-2.2	Disc. Filament (Wire Wound)
R76	27KΩ	½		BTS-27K	Tone Comp.
R77	10 Meg.	½		BTS-10 Meg.	AF Grid
R78	330KΩ	½		BTS-330K	AF Plate
R79	270KΩ	½		BTS-270K	Output Grid
R80	2200Ω	2		BW-2-2200	Filter
R81	2200Ω	2		BW-2-2200	Filter
R82	6.8 Meg.	½		BTS-6.8 Meg.	Voltage Divider
R83	1 Meg.20%	½		BTS-1 Meg.	1st Sync. Amp. Grid
R84	47Ω	1		BTA-4700	1st Sync. Amp. Plate
R85	47Ω	1		BTA-4700	1st Sync. Amp. Plate Decoupling
R86	1 Meg.20%	½		BTS-1 Meg.	Sync. Sep. Grid
R87	4.7Meg.20%	½		BTS-4.7 Meg.	Voltage Divider
R88	6800Ω	½		BTS-6800	Sync. Sep. Plate
R89	1 Meg.20%	½		BTS-1 Meg.	2nd Sync. Amp. Grid
R90	47Ω	½		BTS-4700	2nd Sync. Amp. Plate
R91	1000Ω	½		BTS-1000	Decoupling
R92	22KΩ	½		BTS-22K	Voltage Divider
R93	22KΩ	½		BTS-22K	Integrator
R94	8200Ω	½		BTS-8200	Integrator
R95	8200Ω	½		BTS-8200	Integrator
R96	1.5 Meg.	½		BTS-1.5 Meg.	Vert. Osc. Grid
R97	100KΩ	½		BTS-100K	Voltage Divider
R98	2.2Meg.20%	½		BTS-2.2 Meg.	Voltage Divider
R99	220KΩ	½		BTS-220K	Voltage Divider
R100	56KΩ	½		BTS-56K	Feedback
R101	2.2Meg.20%	½		BTS-2.2 Meg.	Vert. Output Grid
R102	1800Ω	½		BTS-1800	Vert. Output Cathode See Note 2
R103	8200Ω	½		BTS-8200	Vert. Peaking
R104	10KΩ	1		BTA-10K	Vert. Output Plate Decoupling
R105	470KΩ	½		BTS-470K	Horiz. Sync. Disc. Load
R106	470KΩ	½		BTS-470K	Horiz. Sync. Disc. Load
R107	1 Meg.20%	½		BTS-1 Meg.	Horiz. Sync. Disc. Load
R108	470KΩ	½		BTS-470K	Horiz. AFC Filter Network
R109	560Ω	½		BTS-560	Horiz. AFC Grid
R110	10Ω	½		BW-½-10	Horiz. AFC Cathode
R111	47KΩ	1		BTA-47K	Horiz. AFC Plate
R112	39KΩ	1		BTA-39K	Horiz. AFC Plate
R113	39KΩ	1		BTA-39K	Horiz. AFC Screen
R114	27KΩ	1		BTA-27K	Voltage Divider
R115	27KΩ	½		BTS-27K	Horiz. Osc. Grid
R116	10KΩ	1		BTA-10K	Horiz. Osc. Screen
R117A	5000Ω	10		AB-5000	Horiz. Osc. Plate Wire Wound
B	6750Ω	10	3015	AB-7000	Bleeder Wire Wound
C	93Ω	10			Bias Network Wire Wound
R118	68000Ω	½		BTS-6800	Differentiator
R119	220KΩ	½		BTS-220K	Horiz. Discharge Grid
R120	680KΩ	½		BTS-680K	Horiz. Discharge Plate See Note 3
R121	470KΩ	½		BTS-470K	Horiz. Discharge Plate
R122	6800Ω	½		BTS-6800	Horiz. Peaking
R123	30Ω	½			Parasitic Supp. See Note 1
R124	470KΩ	½		BTS-470K	Horiz. Output Grid
R125	100Ω	2		BW-2-100	Horiz. Output Cathode
R126	6200Ω	2		BT-2-6200	Horiz. Output Screen
R127	5300Ω	25	3020-1		Damper Filter tapped ⓐ 500Ω and 1000Ω from one end.
R128	3.3Ω	½			HV Rect. Filament
R129	1 Meg.	1			HV Filter
R130	270Ω	2		BW-2-270	Focus Coil Shunt
R131	2700Ω	2		BT-2-2700	Focus Coil Shunt

RESISTORS (CONT.)

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA DEWALD PART No.	IRC PART No.	IDENTIFICATION CODES
R132A	1360Ω	20	3018		Filter (Wire Wound)
B	230Ω	10		AB-225	Bias Network (Wire Wound)
R133	56Ω	2		BW-2-56	Bias Network See Note 3
R134	12Ω	2		BW-2-12	Voltage Divider See Note 3
R135	18Ω	½		BW-½-18	Pilot Lamp Dropping See Note 3
R136	1000Ω	½		BTS-1000	Bias Network

Note 1. Some models use 39Ω resistor in this application.
Note 2. Some models use 2700Ω resistor in this application.
Note 3. Not used in all models.

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	REPLACEMENT DATA DEWALD PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1	117VAC ⓐ 2.28A	700VCT .290ADC ⓐ SEC. 4 12.6VAC ⓐ 5A	5VAC ⓐ 6A	6VAC ⓐ 2A	1050	P-8152	P-3061	TP-365

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING DC RESISTANCE PRI.	RATING DC RESISTANCE SEC.	REPLACEMENT DATA DEWALD PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	NOTES
T2	43Ω Tapped ⓐ 21Ω	42Ω Tap. ⓐ 10Ω	1064				Hor.Sync. Disc.Trans.
T3	15Ω	920Ω	1053	A-8121	A-4000	TB0-1	Vert.Block Osc.Trans.
T4	42Ω Tapped ⓐ 180Ω	SEC. 1 10.6Ω Tap. ⓐ .6Ω SEC. 2 0Ω	1051	A-8117		TFB-1	Hor.Output Trans.
T5	59Ω	6.9Ω	1052	A-8115	A-3035	TS0-1	Vert.Output Trans.
T6A	14Ω		1055	DY-1			Hor.Deflection Coil
B	68Ω						Vert.Deflection Coil
T7	25Ω		1056	FC-10			Focus Coil

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING IMPEDANCE PRI.	RATING IMPEDANCE SEC.	RATING DC RES. PRI.	RATING DC RES. SEC.	REPLACEMENT DATA DEWALD PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
T8	7.7KΩ	3.8Ω	460Ω	.4Ω		A-8114	A-2931	RO-13	

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA DEWALD PART No.	REPLACEMENT DATA MEISSNER PART No.	NOTES
L1	Ant.Trans.	0Ω				
L2	Interference Trap	0Ω				
L3	Interference Trap	0Ω				
L4	Fil. Choke	0Ω				
L5	Mixer Grid Coil	0Ω				
L6	1st Video IF and Sound Take-Off	.1Ω				
L7	2nd Video IF	.1Ω				
L8	3rd Video IF	.1Ω				
L9	4th Video IF	.1Ω				
L10	Sound IF Trap	.1Ω				
L11	5th Video IF	.1Ω				
L12	Fil. Choke	0Ω				
L13	Fil. Choke	0Ω				
L14	Fil. Choke	0Ω				
L15	Fil. Choke	0Ω				
L16	Peaking	6Ω				120 microhenries. Wound on 22KΩ resistor.
L17	Peaking	10Ω				250 microhenries.
L18	Peaking	6Ω				120 microhenries. Wound on 22KΩ resistor.
L19	Peaking	5.5Ω				93 microhenries.
L20	Peaking	6Ω				120 microhenries. Wound on 22KΩ resistor.
L21	Peaking	5.5Ω				93 microhenries.
L22	Fil. Choke	0Ω				
L23	1st Sound IF	.1Ω	.1Ω			
L24	2nd Sound IF	.1Ω	.1Ω			
L25	Disc.Trans.	.1Ω	.1Ω			
L26	Width Cont.	.2Ω		1066		
L27	Hor. Linearity	2Ω		1065		

PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

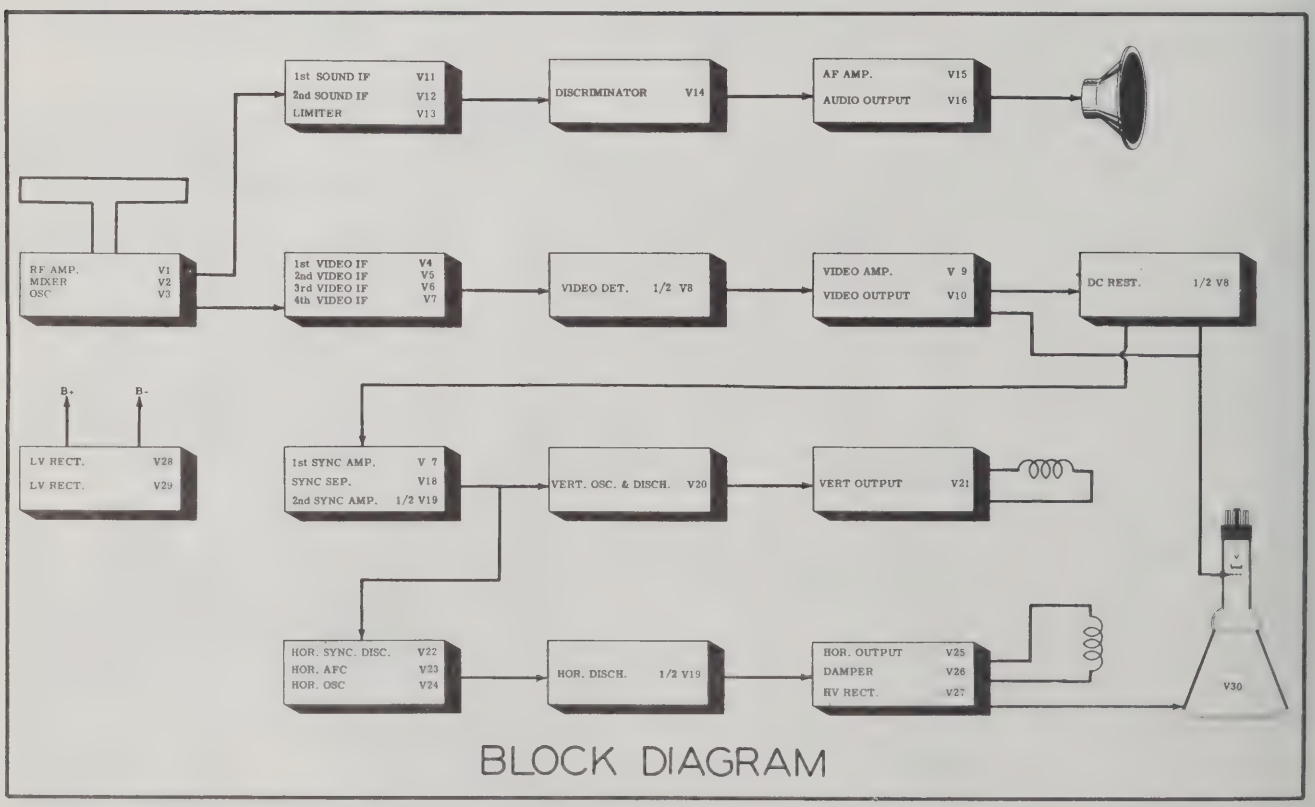
ITEM No.	RATINGS		REPLACEMENT DATA			NOTES
	FIELD RES.	V. C. IMP.	DEWALD PART No.	JENSEN PART No.	QUAM PART No.	
SP1	62Ω	3.8Ω	7010		6E #	# Supplied on request. State field resistance and current.
	CONE DIA.	V. C. DIA.				
SP2	6"	3/4"				

DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA DEWALD PART No.		NOTES
M1	Bayonet	6-8Ω	.15	Brown			Type #47 (CT-101 only)

MISCELLANEOUS

ITEM No.	PART NAME	DEWALD PART No.	NOTES
M2	RF Tuner		
M3	Fuse		Type MTH 6A
M4A	Fuse		Type GJV .2A (CT-101 only)
B	Dial Lamp (Fuse)		Type #51. (CT-101 only)
M5	Ion Trap	1057	



BLOCK DIAGRAM

HORIZONTAL OSCILLATOR ALIGNMENT

HORIZONTAL OSCILLATOR CHECK:

While receiving a television signal, turn the horizontal hold control fully counter-clockwise. Remove the signal momentarily by turning the contrast control fully counter-clockwise and then return it to its normal operating position. The picture should pull back into synchronization.

Now turn the hold control fully clockwise. Remove the picture momentarily by turning the contrast control fully counter-clockwise and then back to its normal setting. The picture should pull back into synchronization.

If the receiver synchronizes properly under the above checks, it is not necessary to align the horizontal oscillator. However, if the picture is not normal or stable, the horizontal oscillator must be aligned.

SLIGHT RETOUCH ALIGNMENT:

If the receiver failed the above checks at either extreme of the hold control, it may be possible to align the horizontal oscillator by making slight adjustments.

Tune in a TV station and adjust the fine tuning for best sound quality. Adjust the vertical hold control to synchronize the picture vertically. Adjust the contrast control to slightly less than normal. Turn the horizontal hold control to the extreme position where the oscillator falls out of sync. Momentarily remove the signal. Adjust the horizontal frequency adjustment B2 (rear of chassis) until the oscillator pulls into synchronization. Check hold and pull-in as outlined above.

COMPLETE HORIZONTAL OSCILLATOR ALIGNMENT:

Tune in a TV station and adjust the fine tuning for best sound quality. Adjust the vertical hold control to synchronize the picture vertically. Adjust the contrast control to slightly less than normal. Adjust the horizontal phase adjustment B1 until the blanking bar, which may appear in the picture, moves to the right and off the raster. If ripples occur in the raster, turn B1 clockwise until the unstable condition is removed. The length of this adjustment screw, in its correct position, is usually about 1/2 inch beyond the bushing.

Turn the horizontal hold control fully counter-clockwise and adjust B2 clockwise until the picture fails to synchronize. Now slowly turn B2 counter-clockwise to the point where the picture synchronizes. Readjust B1 so that the left side of the picture is close to the left side of the raster but does not fold over.

Turn the horizontal hold control fully clockwise. The right side of the picture should be close to the right side of the raster but should not fold over. If it does, readjust B1.

Momentarily remove the signal. When the signal is restored, the picture should fall into synchronization. If it does not, readjust B2 counter-clockwise until picture falls into synchronization.

Turn the horizontal hold control fully counter-clockwise. The picture should fall back into synchronization after momentary removal of the signal.

If the picture fails to synchronize after momentary removal of the signal at both extremes of the horizontal hold control, there may be insufficient pull-in range. However, if the picture will pull in through 3/4 of the hold control range, operation should be satisfactory as excessive pull-in is objectionable. Excessive pull-in makes the circuits more sensitive which may result in their being triggered by noise pulses. Also, the vertical synchronizind and equalizing pulses may cause a bend in the upper part of the picture.

HORIZONTAL LINEARITY ADJUSTMENTS

Turn the horizontal drive control clockwise as far as possible without crowding the right side of the picture. This provides maximum voltage to the picture tube second anode. Adjust the width adjustment B3 until the picture is symmetrical from left to right. Adjust the horizontal centering control to properly center the picture horizontally.

The horizontal drive control and adjustments B3 and B4 are interacting, and should be adjusted alternately for best results. If continued adjustment of the width, linearity, and drive fails to give linearity, it may be necessary to move the top on R127 which is located in the high voltage compartment. After moving this tap, it will be necessary to readjust the drive, width, and linearity to obtain proper results.

EMERSON
MODEL 613-A (Ch. 120085A, B)
(BATTERY-LINE OPERATED)

EMERSON
MODEL 613-A (Ch. 120085A, B)
(BATTERY-LINE OPERATED)

EMERSON MODEL 613A

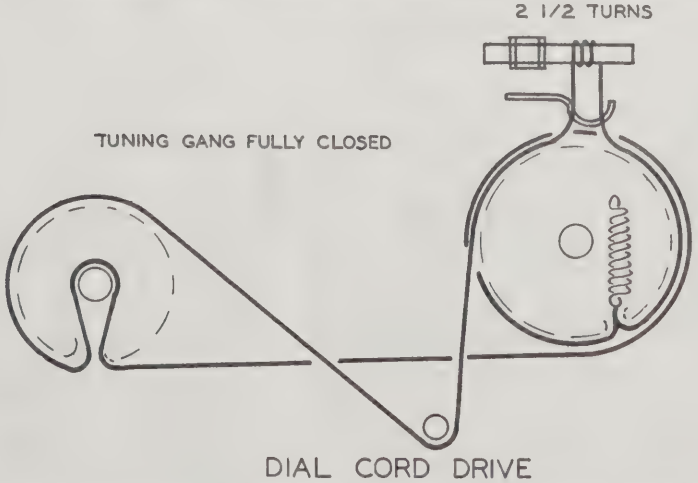
TRADE NAME	Emerson, Model 613A (Ch. 120085A, B)
MANUFACTURER	Emerson Radio and Phonograph Corp., 111 8th Ave., New York 11, New York
TYPE SET	Three Power Operated Portable Superheterodyne Receiver with Loop Antenna
TUBES (FOUR)	Types 1R5 Converter, 1U4 IF Amp., 1U5 DET-AVC-AF, 3V4 or 3Q4 Power Output
POWER SUPPLY RATING:	105-125 Volts AC-DC or 1.5 Volts "A" Supply and 67.5 Volts "B" Supply .17 Amp. @ 117 Volts AC or 255MA @ 1.5 Volts DC and 8.5MA @ 67.5 Volts DC
TUNING RANGE—BROADCAST	540-1620KC

ALIGNMENT INSTRUCTIONS--READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use battery power when available. If AC power is used, use an isolation transformer when avilable. If not, connect a .1MFD capacitor in series with low side of the signal generator and B-.

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to stator of rear section as tuning gang. Low side to B-.	455KC (400~ Mod.)	Tuning gang fully open	Across voice coil	A1, A2, A3	Adjust for maximum output. If AC power is used with an isolation transformer reduce dummy antenna to 200MMF to reduce hum modulation.
2.		Loop	1620KC	"	"	A4	Replace set in cabinet. Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output. Adjustments are reached thru a hole in bottom of cabinet.
3.		Loop	1400KC	Tune for max. output.	"	A5	"



EMERSON
MODEL 613-A (Ch. 120085A, B)
(BATTERY-LINE OPERATED)

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PARTS LIST AND DESCRIPTIONS

EMERSON MODEL 613A

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: EMERSON PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	Converter	1R5	1R5	7AT	
V2	IF Amp.	1U4	1U4	6AR	
V3	DET.-AVC-AF	1U5	1U5	6BW	
V4A	Power Output	3V4	3V4	6bX	
B	Power Output	3Q4	3Q4	7BA	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: EMERSON PART No.	REPLACEMENT DATA: AEROVOX PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: ERIE PART No.	REPLACEMENT DATA: SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	80	150	925155 ‡		EDL8215C 10			Filter Red
B	40	150	925136B #		BR4015A			Filter Green
C	30	150						Filter Brown
D	100	25						Filament Bypass Yellow
C2	.05	200	920571	P285-05	ZYW1S5		68P16	AVC Filter
C3	100		928013	1468-0001	5W5T1	GP1K-100	1FM-31	Osc. Grid Cap.
C4	.05	200	920571	P285-05	ZYW1S5		68P16	Filament Bypass
C5	.005	150	920470	P285-005	ZYW4D5	811-005	68P11	IF Grid Filter
C6	.1	200	920573	P285-1	ZNW1P1		68P17	Filament Bypass
C7	5000		928109	P285-005	ZYW4D5	811-005	29C1	Osc. Anode Decoupling
C8A	212		928034	1468-00025	5W5T2	GP2K-220	1FM-32	Diode RF Filter
B	1000			P285-001	ZYW6D1	GP2L-001	29C4	Audio Coupling
C	10000			P285-01	ZZW1S1	821-01	36C1	AF Screen Bypass
D	100			1468-0001	5W5T1	GP2K-100	1FM-31	AF Plate Bypass
E	1000			P285-001	ZYW6D1	GP2L-001	29C4	Audio Coupling
C9	.005	150	920470	P285-005	ZYW4D5	GP2M-005	68P11	Output Plate Bypass
C10	.05	400	920572	P285-05			68P10	Line Filter
C11	.05	400		P285-05			68P10	Line Isolation #
C12	2.2		915005					Neutralizing

‡ Used only in chassis 120085A
# Used only in chassis 120085B

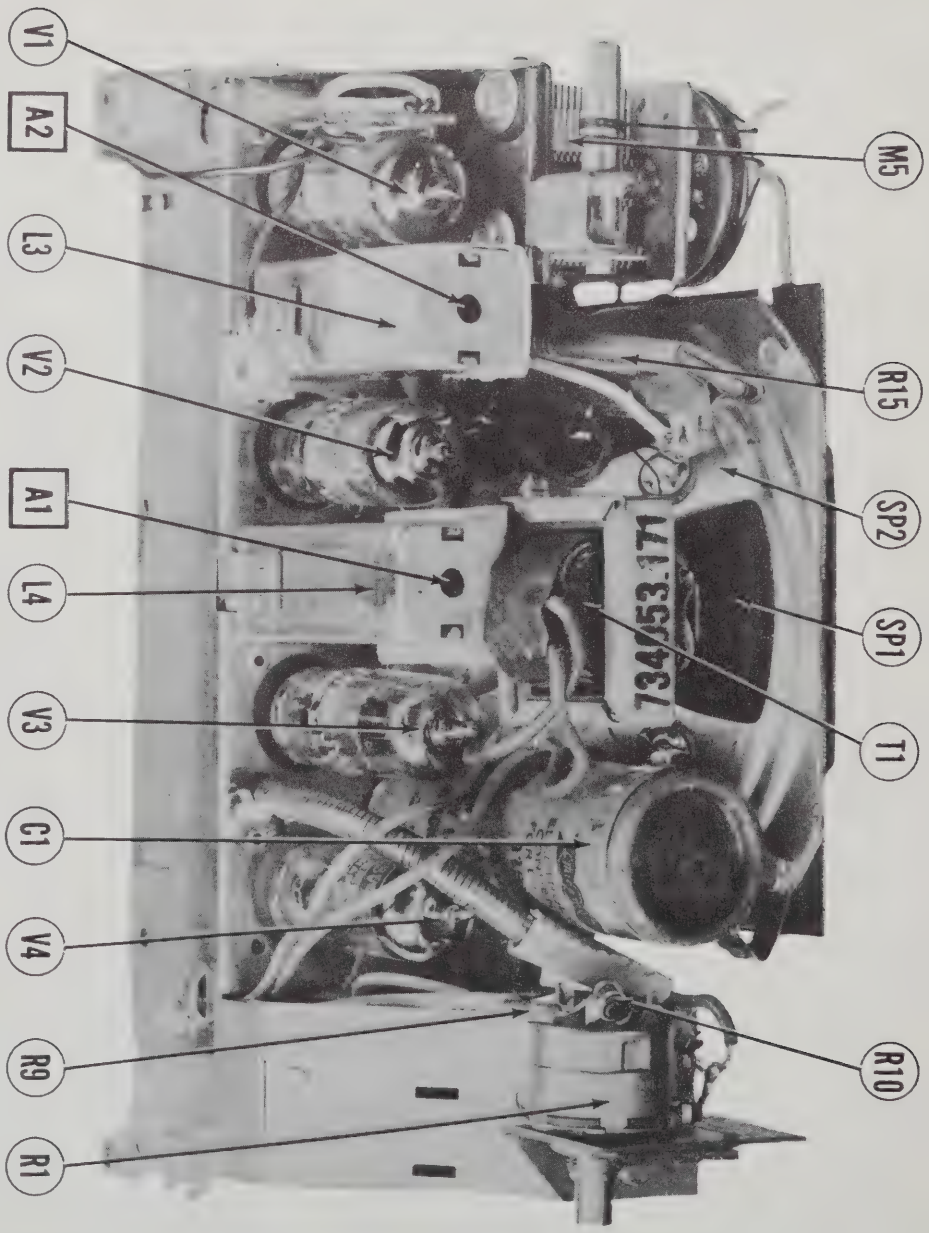
CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: EMERSON PART No.	REPLACEMENT DATA: IRC PART No.	REPLACEMENT DATA: CLAROSTAT PART No.	INSTALLATION NOTES
R1A	1 Meg.	½	390066	Q13-137		Volume control
B	Switch		Not Req.	76-2		Attach to R1A per instructions

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: EMERSON PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES
R2	100KΩ	½	350970	BTS-100K	Osc. Grid
R3	15KΩ	½	340770	BTS-15K	Osc. Anode Decoupling
R4	3.3 Meg.	½	351330	BTS-3.3 Meg.	IF Grid
R5	3.3 Meg.	½	351330	BTS-3.3 Meg.	AVC Network
R6	10 Meg.	½	351450	BTS-10 Meg.	AF Grid
R7	3.3 Meg.	½	351330	BTS-3.3 Meg.	AF Screen
R8	470KΩ	½	351130	BTS-470K	AF Plate
R9	3.3 Meg.	½	351330	BTS-3.3 Meg.	Output Grid
R10	390Ω	½	340390	BW-½-390	Bias Network
R11	470Ω	½	340410	BTS-470	Filament String
R12	820Ω	½	340470	BTS-820	Filament String
R13	1500Ω	½	340530	BTS-1500	Filament String
R14	1500Ω	½	340530	BTS-1500	Filter
R15	2200Ω	10	394041		Filter, center tapped, (Wire Wound)
R16	120Ω	3	394018		Surge Limiter (Wire Wound)

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		EMERSON PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T1A	11KΩ	3.7Ω	550Ω	.4Ω	734053 ‡	A-3329 †	A-2927 †	RO-11 †	† Bend mounting tabs down and mount on original bracket.
B					734053B #				‡ Used in chassis 120085A
									# Used in chassis 120085B

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			EMERSON PART No.	JENSEN PART No.	QUAM PART No.	
	FIELD	V. C. IMP.				
SP1A	PM	3.7Ω	180060 ‡			‡ Used in chassis 120085A
B	PM	3.7Ω	180060B #			# Used in chassis 120085B
	CONE DIA.	V. C. DIA.				
SP2A	3 7/8"	9/16"	‡			
B	3 7/8"	9/16"	#			

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	EMERSON PART No.	MEISSNER PART No.	
L1	Loop Ant.	3Ω		700044		Alt. Pt. #700041
L2	Osc. Coil	2Ω	9Ω	716031	14-1060	
L3	Input IF	21Ω	21Ω	720525	16-6668	
L4	Output IF	24Ω	31Ω	720066	16-6669	

SELENIUM RECTIFIER

ITEM No.	RATING	REPLACEMENT DATA			NOTES
	CURRENT	EMERSON PART No.	SYLVANIA PART No.		
M1	.062A	817012			

BATTERIES

ITEM No.	VOLTAGE	EMERSON PART No.	REPLACEMENT DATA						INSTALLATION NOTES
			EVEREADY			BURGESS			
			"A"	"B"	"A-B"	"A"	"B"	"A-B"	
M2	1.5V"A"		950			2R			
M3	67.5V"B"			467			XX45		

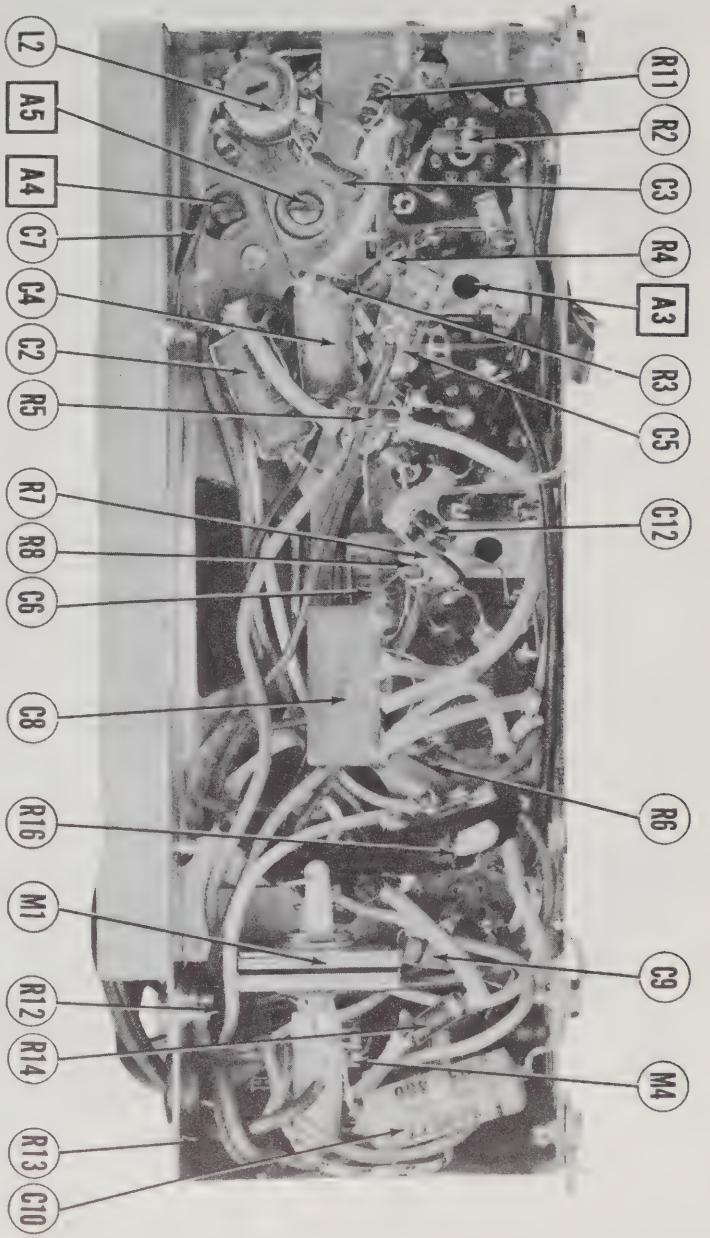
MISCELLANEOUS

ITEM No.	PART NAME	EMERSON PART No.	NOTES
M4A	Switch	180060	AC/DC-Battery (Ch. 120085A)
B	Switch	180060B	AC/DC-Battery (Ch. 120085B)
M5A	2 Gang. Var. Cap.	900057	(14-367MMF, 16-110MMF)
B	2 Gang Var. Cap.	900047	Used with Loop Part #700041
	Cabinet	140236	
	Knob	460091	
	Handle	460123	
	Dial Pointer	525043	

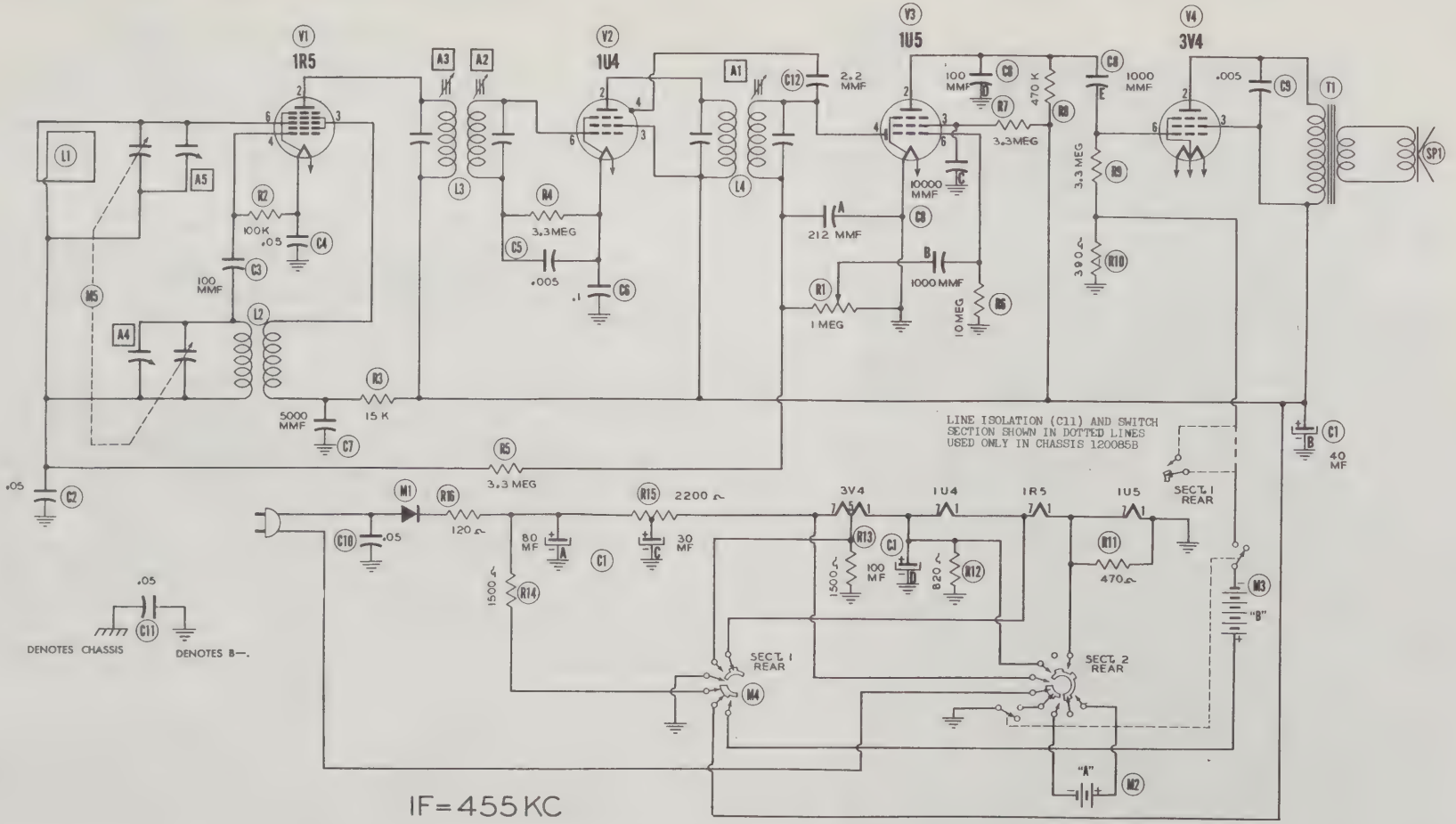
DATE 12/49 SET #79 FOLDER 7

EMERSON MODEL 613A

CHASSIS—BOTTOM VIEW



EMERSON MODEL 613A



VOLTAGE AND RESISTANCE READINGS TAKEN IN AC-DC POSITION.

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	1R5	1.5VDC	87VDC	50VDC	§-9.6VDC	1.5VDC	0V	2.7VDC
V 2	1U4	2.7VDC	87VDC	87VDC	0V	2.7VDC	.2VDC	4.2VDC
V 3	1U5	0V	42VDC	20VDC	-.1VDC	0V	0V	1.5VDC
V 4	3V4	4.2VDC	85VDC	87VDC	112VDC	5.5VDC	0V	6.8VDC

§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	1R5	*	†1.5KΩ	†17KΩ	100KΩ	*	4.3Meg.	*
V 2	1U4	*	†1.5KΩ	†1.5KΩ	Inf.	*	3.3Meg.	*
V 3	1U5	*	†470KΩ	†3.3Meg.	1 Meg.	4KΩ	10 Meg.	*
V 4	3V4	*	†2KΩ	†1.5KΩ	2KΩ	*	3.3Meg.	*

*DO NOT USE OHMMETER TO MEASURE FILAMENT RESISTANCE.
† Measured from output of M1.

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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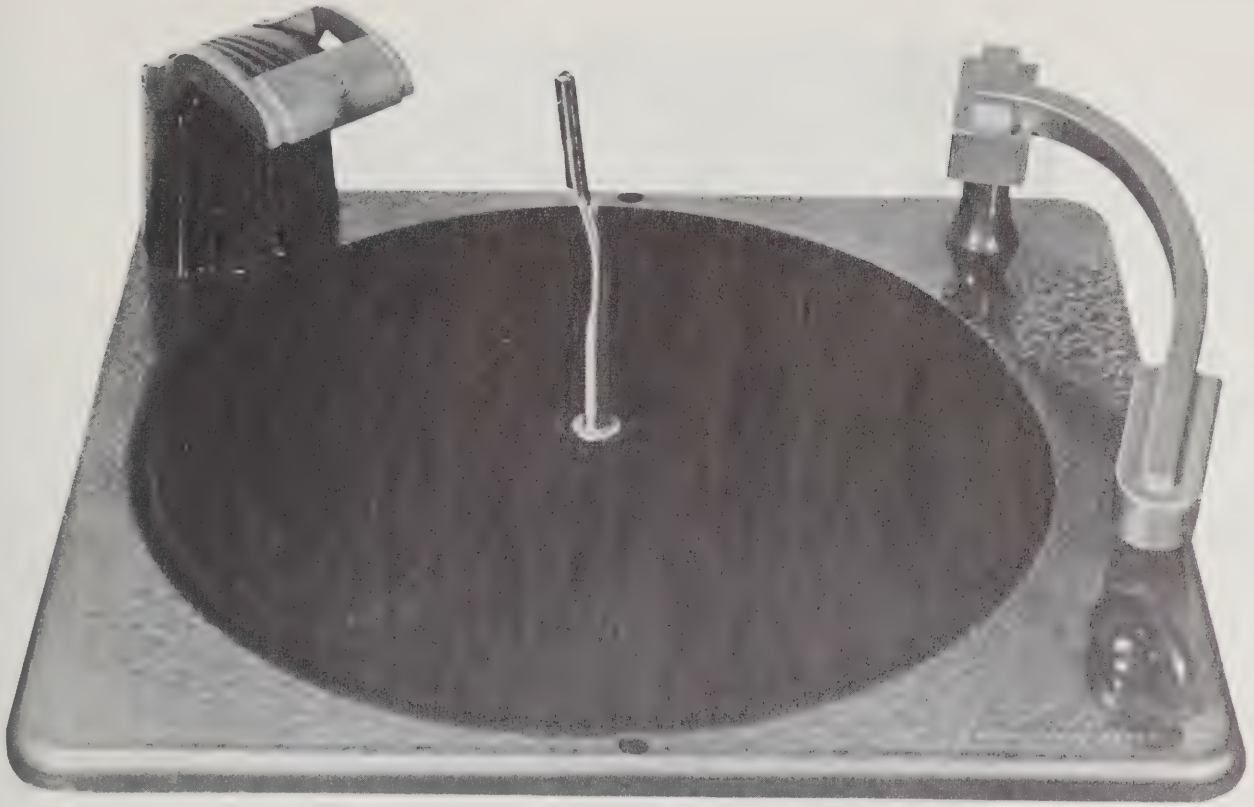
1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of + 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.



TOP VIEW

GENERAL ELECTRIC
MODEL P6

GENERAL ELECTRIC
MODEL P6

GENERAL INFORMATION

The model P6 automatic record changer is a gearless and beltless mechanism designed to play automatically twelve 10-inch records or ten 12-inch records, not intermixed. The last record will be repeated until the changer is turned off. This changer is a single knob controlled mechanism, providing Off, Manual, Automatic, and Reject operation. Any record may be rejected, while playing, by turning the control knob to reject momentarily. Manual operation is provided for single records, home recordings, or odd-size records.

This changer is designed to operate from a power source of 105-125 volts at 60 cycles.

GENERAL ELECTRIC COMPANY
RECEIVER DIVISION ELECTRONICS PARK
SYRACUSE, NEW YORK, U.S.A.

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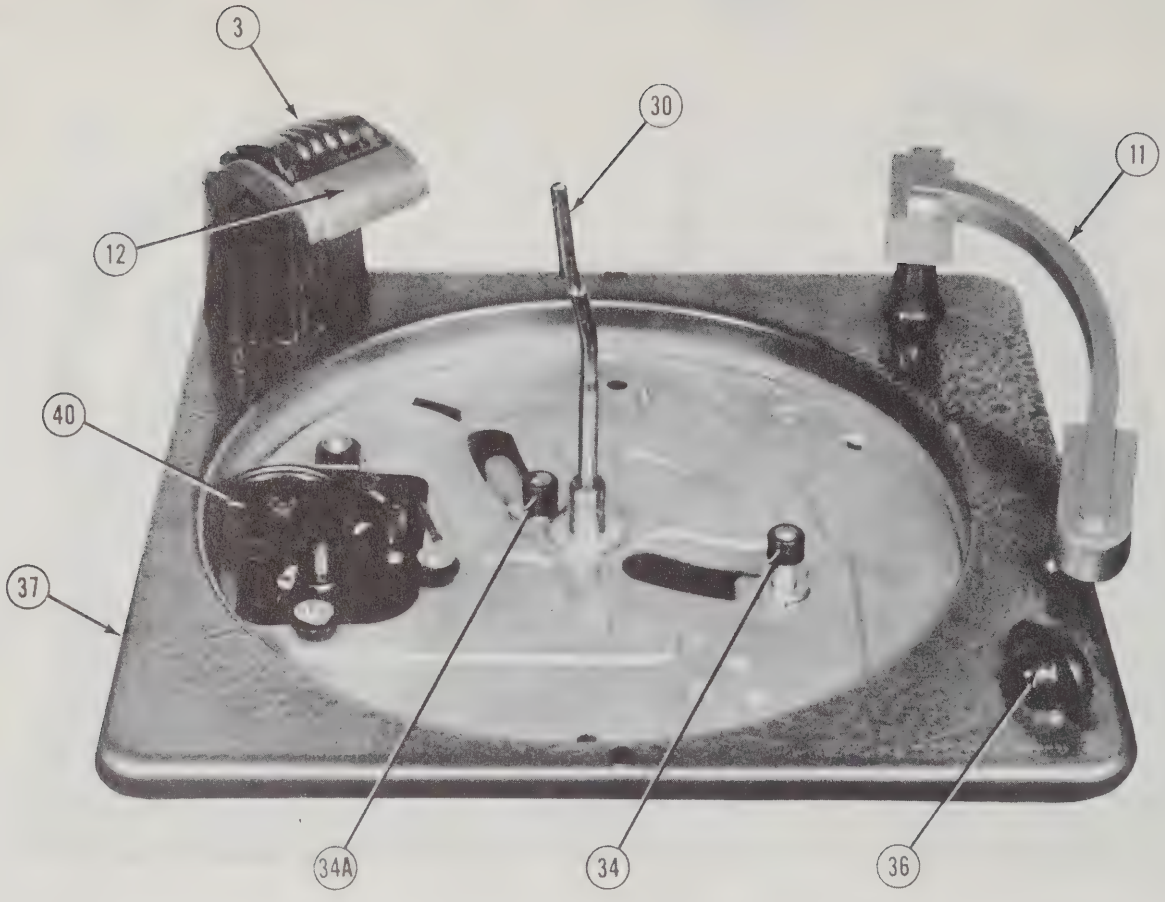
DATE 12/49 SET #79 FOLDER #8



TOP VIEW—LESS TURNTABLE

50-CYCLE OPERATION

To adapt this changer to 50-cycle operation from 60-cycle operation, it is necessary to do two things: (1) A dropping resistor of 70 ohms, part No. RRW-005, must be added in series with the motor power lead to prevent the motor from overheating; (2) at 50 cycles, a 60-cycle motor will run slower. Therefore, it is necessary to add a speed change bushing or spring to the rotor shaft of the motor. Two different types of motors were used on the P6 changer. The first type can be identified by the oblong type of laminated iron core (approximately 2½" x 2"), and the rotor end of the core is curved. This type uses 60 to 50-cycle speed change bushing, part No. RMS-151. The second type motor is identified by the square type of laminated iron core (approximately 2⅜" square) with rounded corners. This type uses a speed change bushing, part No. RMS-153.

AUTOMATIC OPERATION

1. Be sure the pickup arm (11) is on the pickup arm rest (35).

2. Raise the balance arm (1) to a vertical position.

3. For 10-inch records, lower the hinged 10-inch record support (3) to its rest position on the ejector box (9). For 12-inch records, raise the 10-inch record support to a vertical position.

4. Place a stack of records, not to exceed twelve 10-inch records or ten 12-inch records, not intermixed, over the center post. The records will now rest on the step on the center post and on either the ears of the ejector box or the ledge of the 10-inch record support, depending on the size of records being used and position of 10" record support.

5. Lower the balance arm (1) to the records; this steadies the records and assures correct dropping of records.

6. Turn the control button (36) momentarily to the "Reject" position and release it. This turns the changer on and starts the change cycle, thus dropping the first record to the turntable.

7. To reject a record being played, turn the control knob to "Reject" and release it.

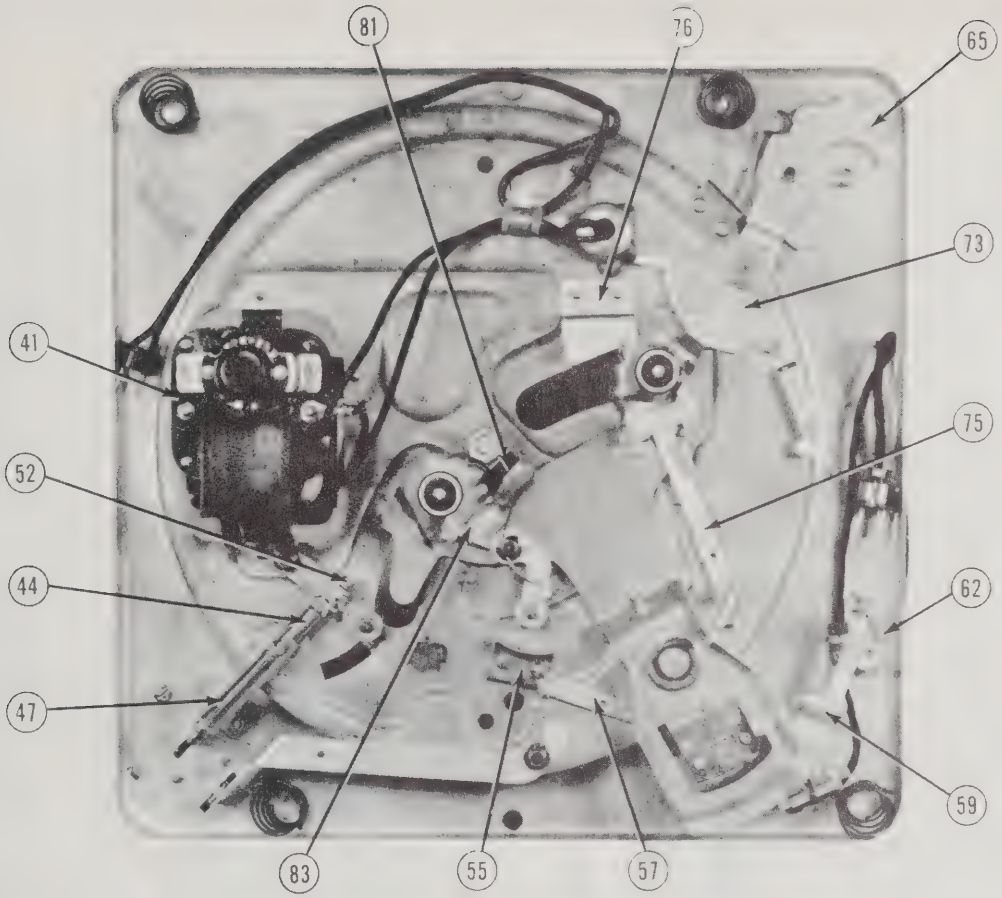
8. To discontinue operation, all records should be dropped to the turntable by repeatedly turning the control button to the Reject position until all unplayed records have dropped to the turntable. Place the pickup arm on the pickup arm rest and turn the control button to the "Off" position.

9. To remove the records from the turntable:
   (a) Raise the balance arm and the 10-inch record support upward, if the record support is in a horizontal position, to permit easy removal of records.
   (b) Lift the records from the turntable.

MANUAL OPERATION

1. Raise the balance arm (1) and the hinged 10-inch record support (3) to a vertical position.

2. Place a record on the turntable.



BOTTOM VIEW

3. Turn the control button to the "Manual" position. This action starts the rotation of the turntable. The position of the selector lever (73) blocks the movement of the lead bearing pin (34), thus preventing the changer from cycling.

4. Place the pickup arm on the lead-in groove at the edge of the record.

5. When the record has finished playing, return the pickup arm to the arm rest and turn the control button to the "Off" position.

THE CHANGE CYCLE

The change cycle may be started by turning the control button (36) to "Reject." The selector lever (73) then, being pivoted through the action of the notched washer, moves against the lead roller dropping lever (75), causing the flange of the dropping lever to be pivoted away from the top of the lead roller shoulder nut. This allows the lead roller bearing pin (34) to rise through the action of the compression spring (74) and to enter the spiral of the turntable, thus starting the change cycle.

As the lead roller of the swing arm follows the spiral on the underside of the turntable, the swing arm (64) cam engages the plunger pin (14), thus raising the pickup arm.

The ratchet arm friction spring (61) engages the ratchet arm (57), swinging the pickup arm out to a position where it is stopped by the ratchet arm contacting the stop bracket (91). The swing arm now pushes against the cam roller of the ejector idler lever (49), which, in turn, moves the lower push pin (44), the ejector lever (27), and the 12-inch record slide bolt (10), thus pushing a 12-inch record off the record shelf.

When 10-inch records are being played, the 12-inch record slide moves forward pushing the 10-inch record slide bolt (4), thus dropping a 10-inch to the turntable.

As the swing arm nears the end of its swing, the cammed dropping lever (83) comes in contact with the lever trip bracket (55), allowing the return roller pin (34A) to rise and enter the spiral groove.

The lead roller pin assembly is pushed back out of the spiral groove of the turntable by the cam surface at the center of the spiral and is held in position by the flange of the lead roller dropping lever (75). The swing arm is now moved back as the return roller follows the spiral.

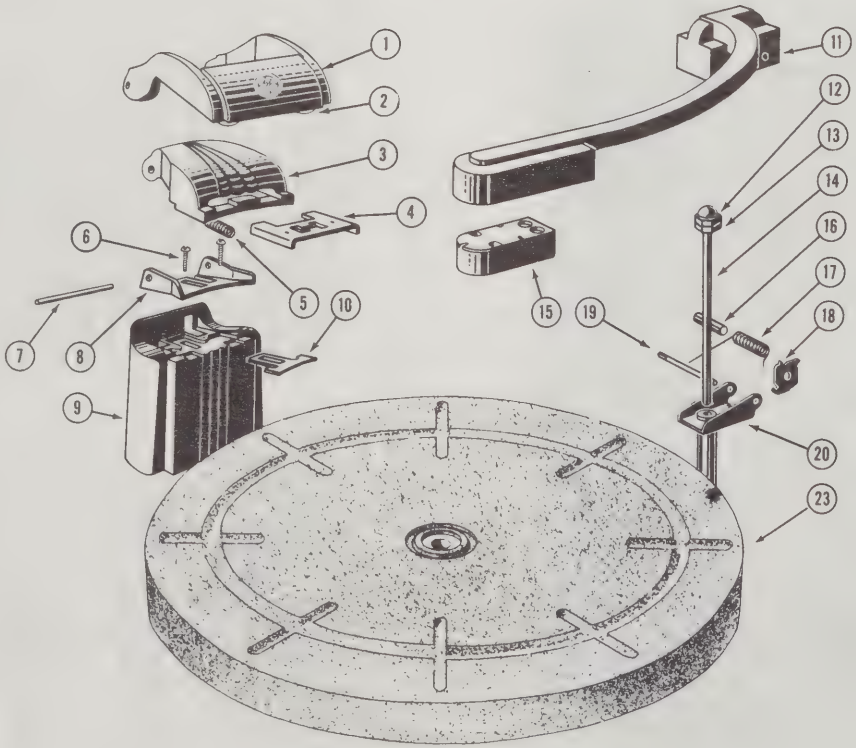
The ejector assembly is now returned to its original position.

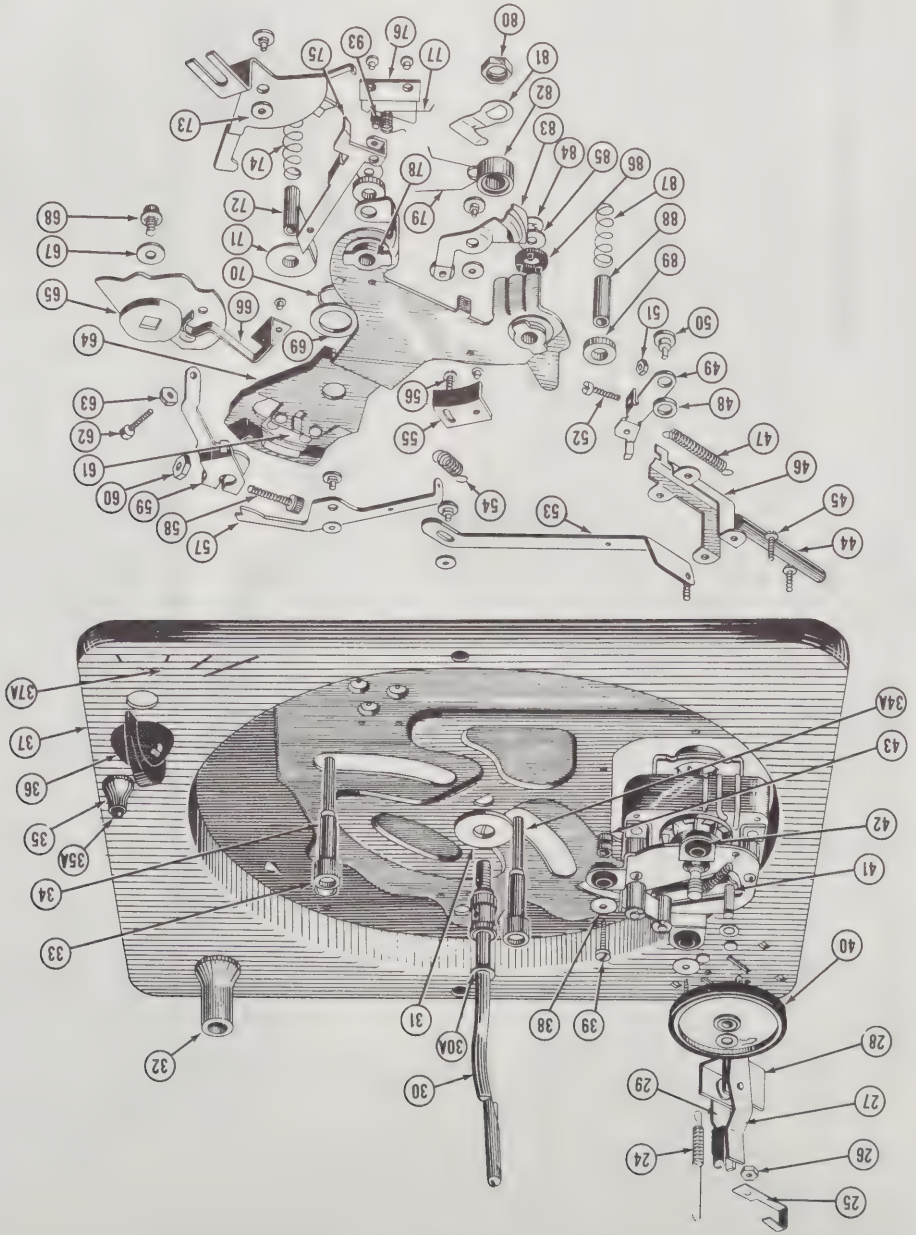
The pickup arm is moved back toward the record for set down by the friction springs (61). The pickup arm is stopped in proper position by the engagement of the ratchet arm (59) and the ratchet arm lever (57). The position of the ratchet arm lever is determined by the change lever (53) and the change lever ejector (29), which are operated by the 10-inch record support (4).

As the cycle nears completion, the swing arm contacts the brake spring (81), which prevents acceleration of the swing arm, thus assuring gentle lowering of the pickup arm to the record as the plunger pin rides down the cam of the swing arm. The friction springs (61) and the ratchet arm lever (57) are moved away from the ratchet arm through

A PHOTOFACT "EXPLODED" VIEW

Howard W. Sams & Co., Inc. 1948

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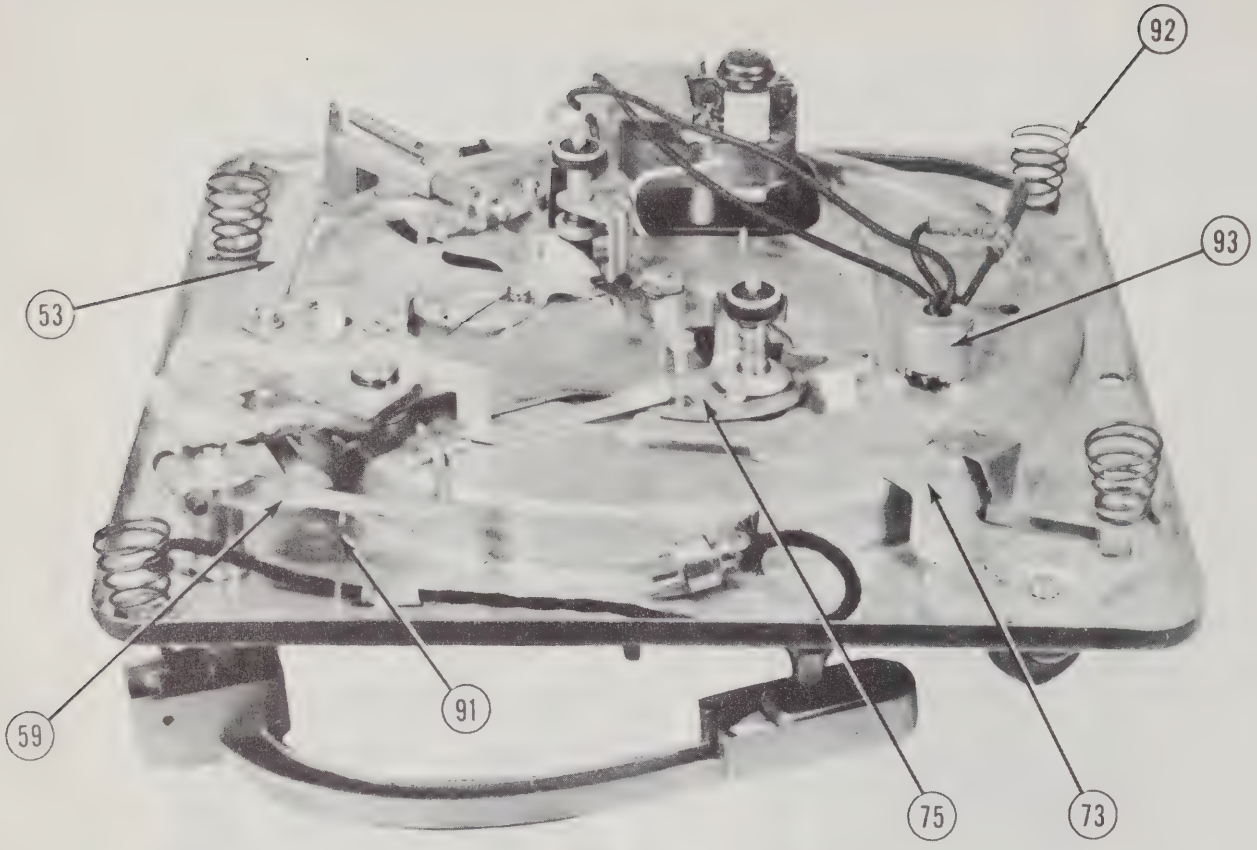


SIDE VIEW

the movement of the swing arm; therefore, the pickup arm is free to move across the record.

The return roller pin assembly is pushed back out of the spiral groove of the turntable by the cam surface at the center of the spiral, and is held in position by the cammed dropping lever (83). This completes the change cycle.

Positive tripping action takes place when the needle moves to within 1⅞" of the center of the spindle. The adjusting screw (62) of the ratchet arm strikes the dropping lever (75) and moves it, thus starting a new change cycle.

SERVICE PROCEDURES

Records Fail to Drop

1. Trip the changer and rotate the turntable by hand until the swing arm (64) completes the first half of the cycle:

(a) Adjust screw (52) until the 12-inch record slide bolt (10) extends 1/32" past the ears of the ejector box.

(b) If 12-inch records fail to drop to turntable, check the ejector arm extension spring (47) to see if it is loose or missing. If loose, or missing, the 12-inch record slide bolt (10) and the ejector lever (27) will stay in a forward position; thereby the ejector mechanism will not be actuated and the records will not be dropped to the turntable.

(c) If 10-inch records fail to drop to the turntable, check the 10-inch record support (3) to see if it is completely resting on the ears of the ejector box. Check to see if the ejector compression spring (5) is missing. If this spring is missing, the 10-inch record slide bolt (4) will stay in a forward position.

Pickup Arm Does Not Set Down in Correct Position

1. With the control knob turned to "Off" position, trip mechanism and rotate the turntable by hand through the cycle; note where the needle lands. Correction may be made by loosening the clamp screw (58) and moving the pickup arm slightly with respect to the ratchet arm (59). The needle should land approximately ⅛" from the edge of the record.

2. Check spring (54) to see if it is missing or too weak to actuate ratchet arm lever (57).

Pickup Arm Drops Fast When Setting Needle on Record

1. Check the friction brake spring (81); may be weak or broken.

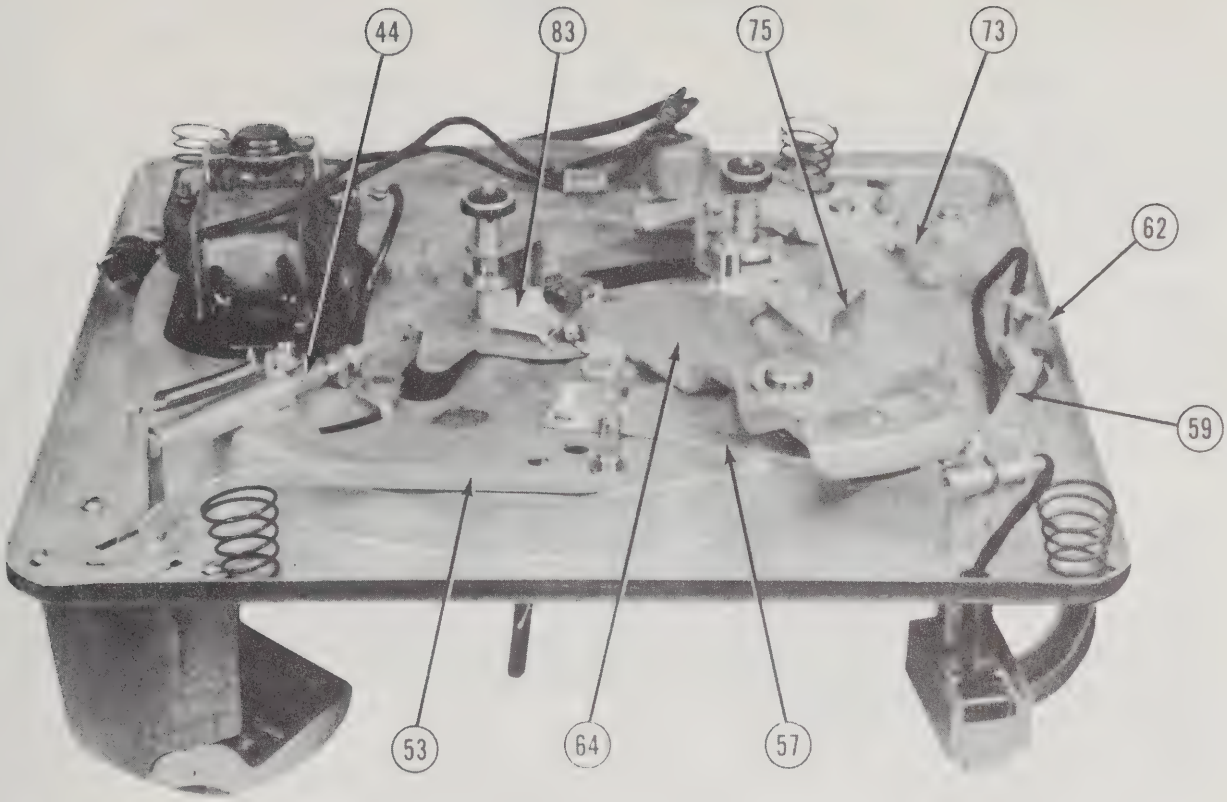
Pickup Arm Does Not Set Down on Record

1. The pickup arm height adjustment is made by the acorn nut (12) of the plunger pin (14).

2. Check the pickup lead wire to see if it is clear of the contact point of the pickup arm and the plunger pin.

Mechanism Trips Before Record Is Completed

1. Turn the adjusting screw (62) of the ratchet arm (59) counterclockwise. This adjustment will allow the pickup arm to travel nearer the spindle.



REAR VIEW

Mechanism Fails to Trip at End of Record

1. Check adjusting screw (62) to see if it is making contact with the lead roller dropping lever (75). This screw should be adjusted so that when the pickup arm comes within 1⅞" of the center of the record the mechanism will be tripped.

2. Check the compression spring (74). It may be too weak to actuate the lead roller bearing pin assembly, and may not raise it sufficiently to enter the spiral of the turntable. If this is true, the mechanism will not operate when the control button is turned to Reject.

3. If pickup arm jumps groove in record before tripping, check for tightening of drop lever (75) on washer (71).

Mechanism Jams in Second Half of Change Cycle

1. Check dropping lever torsion spring (77) to see if it is loose or missing. If this spring is not connected, the dropping lever will not be actuated, thus not holding the roller pin (34) down when it is pushed down by the cam surface at the center of the spiral of the turntable. This allows both rollers in the spiral at the same time, thereby jamming the mechanism.

Clicking of Mechanism and Jamming at the Start of the Change Cycle

1. Check the cammed dropping lever torsion spring (79) to see if it is loose or broken. This will allow both bearing pins to stay in a raised position.

Continuous Cycling

1. Check the selector lever spring (66) to see if it is broken or bent.

Changer Does Not Complete Change Cycle But Turntable Continues to Rotate

1. Check the compression spring (87). If spring is too weak to raise the bearing pin (34A), the swing arm will not return to its proper position, thus leaving the pickup arm in an outward and raised position.

LUBRICATION

Use Lubriplate or equivalent on the following:

1. The ten-inch ejector slide plate (4) and the twelve-inch ejector slide plate (10).
2. Lead roller shoulder nut.

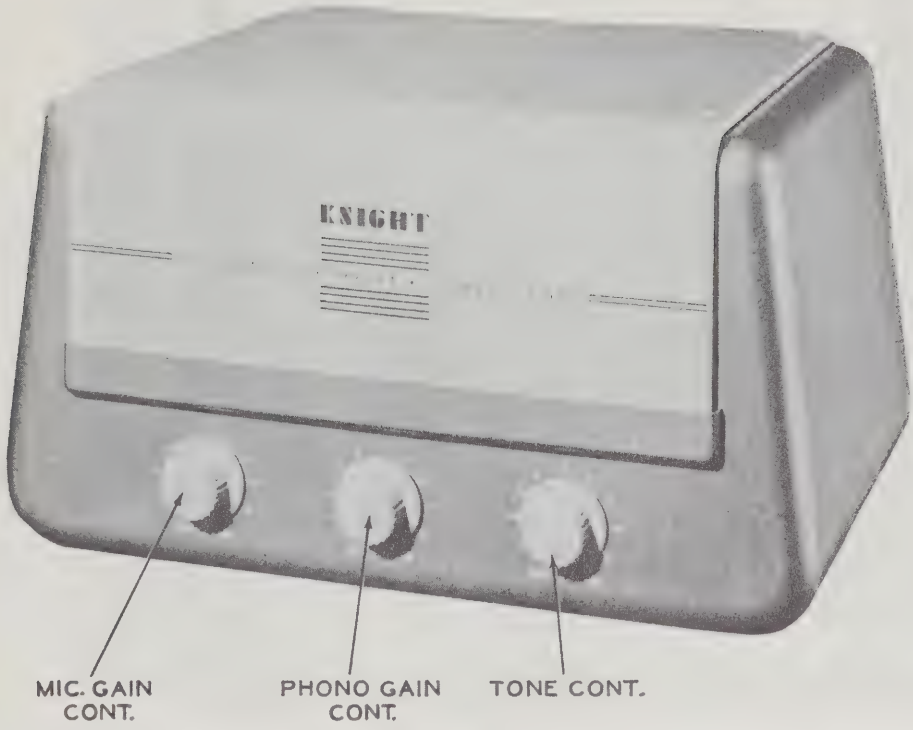
Use Millicott 70K or equivalent on the following:

1. On the edges of the slots where the swing arm clamps (78), slide on the mounting plate.
2. Sloping edge of the cammed dropping lever assembly (83).
3. Between the friction spring washer (30A) and the spindle.
4. Lever bearing washer (48).
5. Ejector idler lever pivot pin (49).
6. Cammed dropping lever roller and pivot pin (83).
7. Ratchet arm lever pivot pin (57).
8. Lead roller drop lever pivot pin (75).
9. Change lever fulcrum pin and slide washer (53).

PARTS LIST

Ref. No.	Part No.	Description
1	RMA-003	Balance arm assembly (Including Item 2)
2		Rubber Bumpers
3	RMM-062	10-inch Record Support
4	RMM-069	10-inch Record Slide Bolt
5	RMS-131	Ejector Compression Spring
6		4-40 x 3/8" R.H. Machine Screw
7	RMP-012	Hinge Pin
8	RMM	Slide Bolt Cover
9	RME	Ejector Box
10	RMM-071	12-Inch Record Slide Bolt
11	RPA-005	Pickup Arm
12		Acorn Nut for Pickup Arm Plunger Pin
13		10-32 Bearing Pin Jam Nut
14	RMP-013	Adjusting Plunger Pin
15	RPX-010	Variable Reluctance Pickup
16	RMM-068	Balance Spring Tube
17	RMS-132	Pickup Arm Balance Spring
18	RMR-006	Pickup Arm Ratchet
19	RMP-014	Pivot Yoke Pin
20	RMP-015	Pickup Arm Swing Post Sub-Assembly
23	RMT-013	Turntable
24	RMS-133	Balance Arm Spring
25	RMS-134	Ejector Pressure Spring
26		4-40 Hex Nut
27		Ejector Lever (Part of Item 28)
28	RMX-111	Ejector Pivot Channel Sub-Assembly (Including Items 27 and 29)
29		Change Lever (Part of Item 28)
30	RMV-040	Center Post Assembly
30A	RMS-135	Friction Spring Washer
31	RMM-063	Reenforcement Washer
32		Pickup Arm Mounting Post (Part of Item 37)
33		Roller (Part of Items 34 and 34A)
34	RMB-014	Bearing Pin and Roller (Lead Roller)
34A	RMB-014	Bearing Pin and Roller (Return Roller)
35		Pickup Arm Rest (Part of 37)
35A		Arm Rest Bumper (Part of 37)
36	RDK-128	Control Knob
37		Baseplate (Including Items 32, 35, and 46)
37A		Decal
38		Flat Washer
39		6 x 5/8 S.M. Motor Mounting Screw
40	RMW-029	Idler Wheel for Square Core Type Motor (See 50-Cycle Operation)
	RMW-043	Idler Wheel for Oblong Core Type Motor (See 50-Cycle Operation)
	RMS-151	50-Cycle Conversion Spring for Oblong Core Type Motor (See 50-Cycle Operation)
	RMS-152	Idler Wheel Tension Spring for Oblong Core Type Motor (See 50-Cycle Operation)
	RMS-153	Conversion Spring for Square Core Type Motor (See 50-Cycle Operation)
	RMS-081	Idler Wheel Tension Spring for Motor with Black Idler Wheel and Square Laminated Core
41	RBH-008	Phonomotor
42		Motor Mounting Grommet
43		Motor Mounting Spacers
44		Lower Push Pin
45		6-32 x 3/8 Thd. Cutting Machine Screw
46		Ejector Pin Guide (Part of Item 37)
47	RMS-136	Ejector Arm Extension Spring
48	RMM-064	Lever Bearing Washer
49	RMX-112	Ejector Idler Lever Assembly (Including Items 51 and 52)
50	RMP-016	Lever Fulcrum Pin
51		Lock Nut (Part of Item 49)
52		6-32 x 5/8" Adjusting Screw (Part of Item 53)
53	RMM-072	Change Lever
	RMM-076	Slide Washer
	RMM-077	Lever Fulcrum Pin
54	RMS-137	Ratchet Arm Lever Spring
55		Lever Trip Bracket
56		6-32 x 3/8" Thd. Cutting Machine Screw
57	RMM-073	Ratchet Arm Lever Fulcrum Pin
58		1" x 10-32 Socket Head Cap Screw
59	RMX-113	Ratchet Arm
60		10-32 Hex Nut
61	RMS-138	Ratchet Arm Friction Spring
62		5/8" x 6-32 Fillister Hd. Machine Screw
63		6-32 Hex Nut
64	RMA-004	Swing Arm
65		Notched Washer
66	RMS-146	Selector Lever Spring
67		Fulcrum Bearing Washer
68		10-32 x 3/8" Sems Screw
69		33/64" I.D. x 7/8" O.D. x .060" Flat Washer
70	RMS-139	XSC Retaining Ring
71	RMM-065	Lead Roller Shoulder Nut
72	RMM-066	Bearing Pin Spacer
73	RMM-074	Selector Lever
74	RMS-140	Compression Spring
75	RMM-075	Lead Roller Drop Lever
76		Lead Roller Release
77	RMS-141	Drop Lever Torsion Spring
78		Swing Arm Clamp
79	RMS-142	Cammed Dropping Lever Torsion Spring
80		5/16"-24 Center Stud Jam Nut
81	RMS-143	Friction Brake Spring
82		Spacer Collar for Center Post
83	RMX-114	Cammed Dropping Lever Assembly
84	RHM-044	Roller Bearing Speed Nut
85		Fulcrum Bearing Washer
86	RHM-045	Rubber Grommet Cushion
87	RMS-140	Compression Spring
88	RMM-066	Bearing Pin Spacer
89	RMM-067	Bearing Pin Shoulder Nut
90		Grommet for Pickup Leads
91		Ratchet Arm Stop Bracket
92	RMS-144	Mounting Springs
93	RSW-052	Phonomotor Switch
	RRW-005	70-Ohm Wire-Wound Dropping Resistor for 50-Cycle Operation of Phonomotor

KNIGHT
MODEL 93-360



KNIGHT
MODEL 93-360

KNIGHT MODEL 93-360

TRADE NAME	Knight, Model 93-360
SUPPLIER	Allied Radio Corp., 833 W. Jackson Blvd., Chicago 7, Illinois
TYPE SET	AC Operated 2 Channel Audio Amplifier
TUBES(FIVE)	Types 6SJ7 Mic. Pre Amp., 6SC7 AF Amp.-Phase Inverter, (2) 6V6GT Power Output, 5Y3GT Rectifier
POWER SUPPLY	110-130 Volts AC RATING: .28 Amp. @ 117 Volts AC

INPUTS

MICROPHONE: Any high impedance type microphone may be used. Carbon microphones are not recommended. Microphone cable lengths up to 25 feet will not impair operation. If long cable lengths are necessary, it is best to go to a low impedance microphones (50-500Ω) using a 2 conductor shielded cable with a matching transformer at the input of the amplifier.

PHONO: Any crystal pick up may be used. If a magnatic or variable reluctance phono pick up is used it will be necessary to use a separate pre-amplifier connecting the output of the pre-amplifier to the phono input jack of the amplifier.

OUTPUTS

The speaker sockets supply various output impedances to match to the voice coil impedances of PM type speakers. For example- one 8Ω voice coil speaker should be connected to pins 1 and 4 of the speaker plug supplied. If two 8Ω voice coil speakers are used they should be connected to pins 1 and 3 of the speaker plugs. WARNING: Do not operate amplifier with speakers disconnected.

HOWARD W. SAMS & CO., INC. • Indianapolis 7, Indiana

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DATE 12/49 SET #79 FOLDER 9

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: KNIGHT PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	Mic. Pre-Amp.	6SJ7	6SJ7	8N	
V2	AF Amp. - Phase Inverter	6SC7	6SC7	9S	
V3	Power Output	6V6GT	6V6GT	7AC	
V4	Power Output	6V6GT	6V6GT	7AC	
V5	Rectifier	5Y3GT	5Y3GT	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: KNIGHT PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	40	450		AF4444J	UP222245*		*EL-420	● Filter
B	10	450						■ Decoupling
C	10	450						▲ Decoupling
C2	8	450		PRS450/8	BR845		UT-8	Decoupling
C3	40	25		PRS25/50	BR502		TVA-7	Output Cathode Bypass
C4	.05	400		P488-05	GT4S5		TM-15	Audio Coupling
C5	.05	400		P488-05	GT4S5		TM-15	Mic. Amp. Screen Bypass
C6	.05	400		P488-05	GT4S5		TM-15	Audio Coupling
C7	220			1468-0002	5W5T2-	GP2K-220	1FM-32	Tone Compensation
C8	.002	600		P688-002	GT6D2	GP2M-002	TM-22	Tone Compensation
C9	.05	400		P488-05	GT4S5		TM-15	Audio Coupling
C10	.05	400		P488-05	GT4S5		TM-15	Audio Coupling
C11	.05	400		P488-05	GT4S5		TM-15	Line Filter
C12	.05	400		P488-05	GT4S5		TM-15	Line Filter

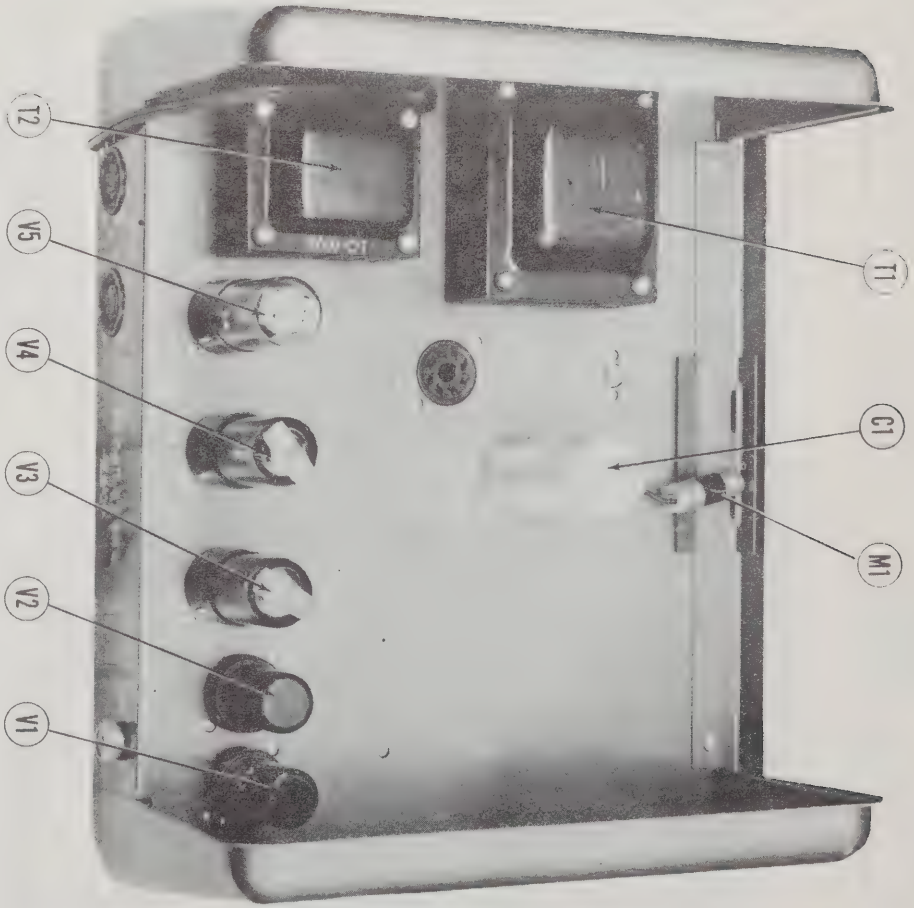
CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: KNIGHT PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
R1A	500KΩ	½	RP-504B	Q13-133	AM-60-Z	Microphone Volume Control
B	Shaft		Not Req.	Not Req.	KSS-3	Attach to R1A Per Instructions
R2A	500KΩ	½	RP-504W1	Q13-133	AM-60-Z	Phono Volume Control
B	Shaft		Not Req.	Not Req.	KSS-3	Attach to R2A Per Instructions
C	Switch		Not Req.	76-1	SW-A	Attach to R2A Per Instructions
R3A	500KΩ	½	RP-504B	Q13-133	AM-60-Z	Tone Control
B	Shaft		Not Req.	Not Req.	KSS-3	Attach to R3A Per Instructions

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: KNIGHT PART No.	IRC PART No.	IDENTIFICATION CODES
R4	100KΩ	½		BTS-100K	Tone Compensation
R5	470KΩ	½		BTS-470K	Mic. Pre-Amp. Plate
R6	2.2 Meg	½		BTS-2.2 Meg	Mic. Pre-Amp. Screen
R7	10 Meg	½		BTS-10 Meg	Mic Pre-Amp. Grid
R8	470KΩ	½		BTS-470K	AF Grid
R9	470KΩ	½		BTS-470K	AF Plate
R10	1500Ω	½		BTS-1500	AF Cathode
R11	10KΩ	½		BTS-10K	Phase Inverter Grid
R12	470KΩ	½		BTS-470K	Phase Inverter Plate
R13	470KΩ	½		BTS-470K	Output Grid
R14	470KΩ	½		BTS-470K	Output Grid
R15	250Ω	10		AB-250	Output Cathode - Wire Wound
R16	3300Ω	1		BW-1-3300	Filter
R17	10KΩ	½		BTS-10K	Filter
R18	10KΩ	½		BTS-10K	Filter

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	KNIGHT PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1	117VAC @.23A	600VCT .075ADC	5VAC @ 2A	6.3VAC @ 1.7A	LP-0168	P-6013 †	P-2952 †	PH-90 †

† Add series resistor to reduce plate voltage.

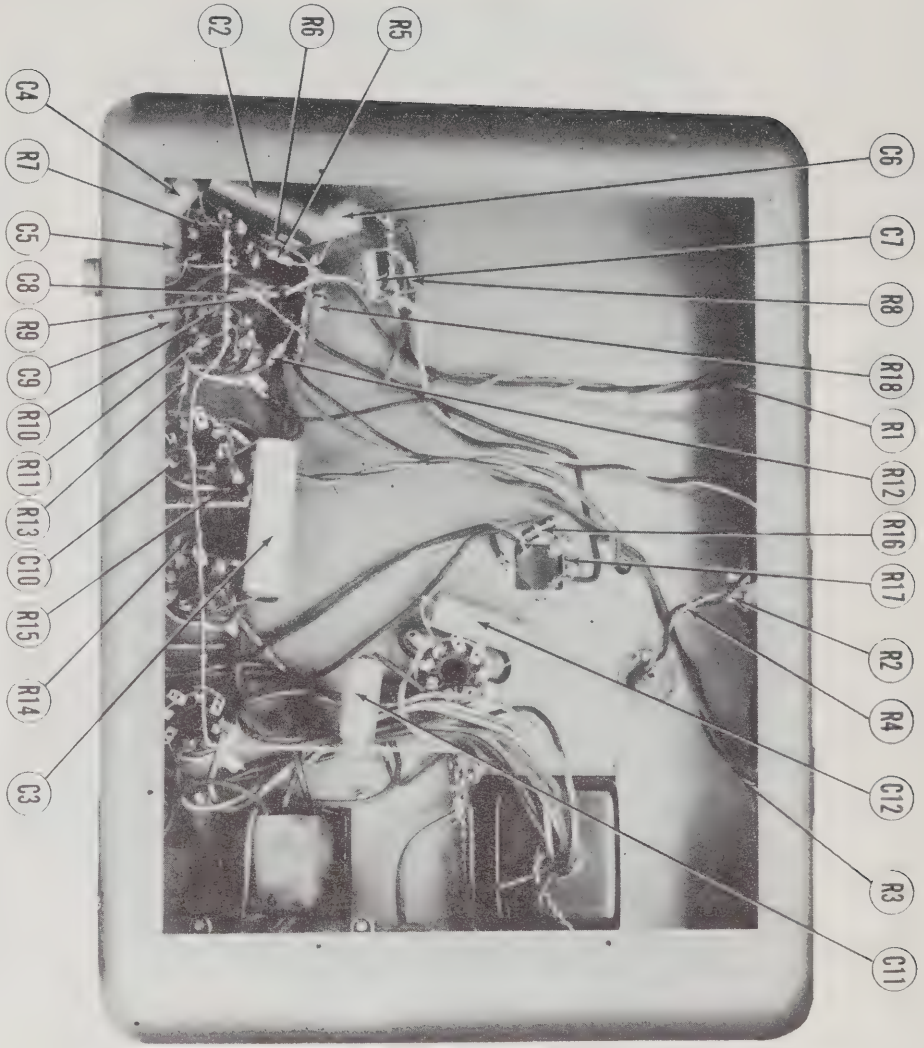
TRANSFORMER (AUDIO OUTPUT)

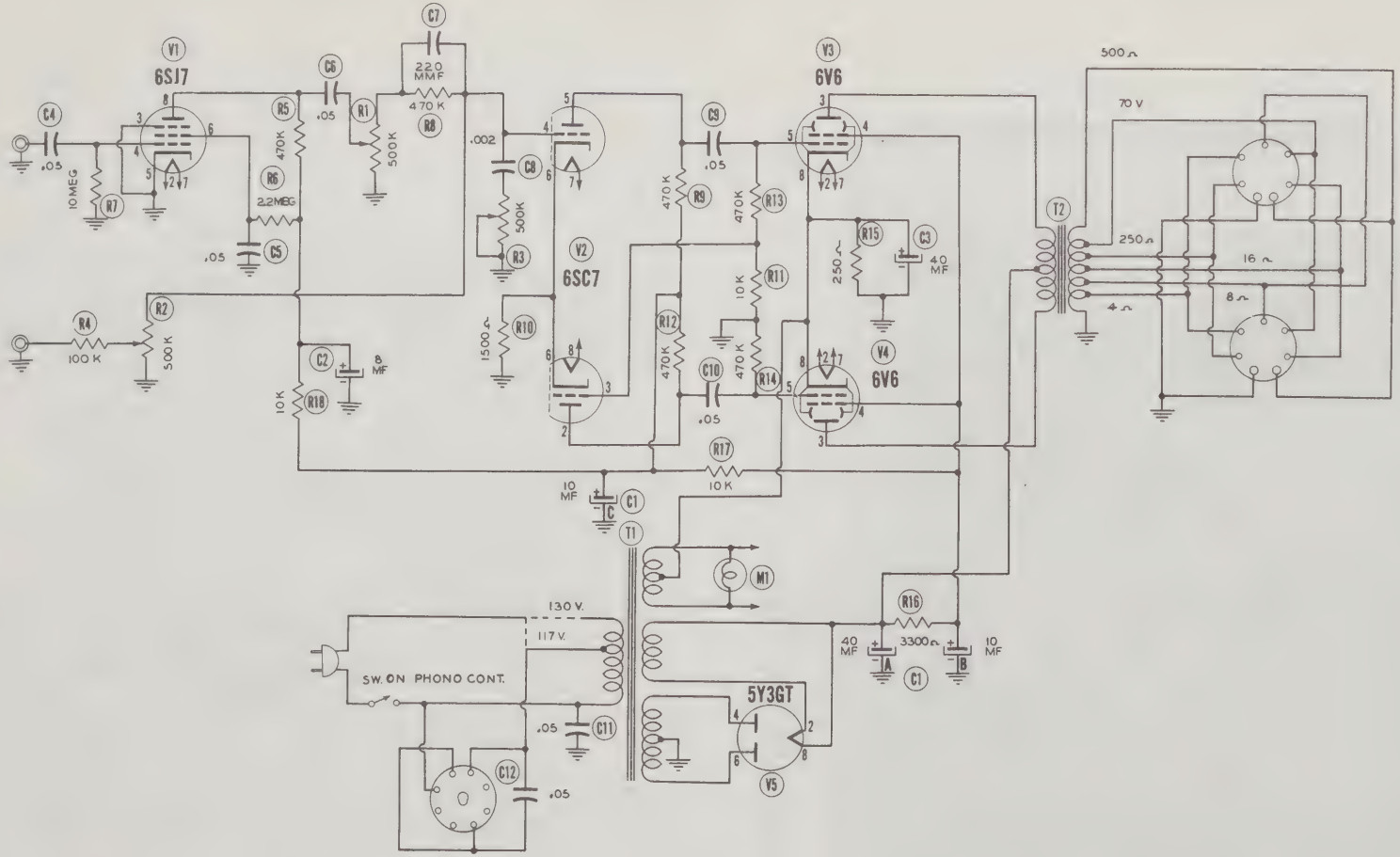
ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		KNIGHT PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T2	10KΩ CT	4Ω 8Ω 16Ω 250Ω 333Ω 500Ω	350Ω CT	.29Ω .3Ω .4Ω 7.3Ω 8.6Ω 10.9Ω	LO-0092	A-3304 ‡	A-3128 ‡	PCO-156‡	‡ Drill new mounting holes.

DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					KNIGHT PART No.		
M1	Bayonet	6 - 8	.25	Blue			Type #44

CHASSIS—BOTTOM VIEW





VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	6SJ7	0V	#	0V	-.4VDC	0V	20VDC	#	70VDC
V 2	6SC7	0V	90VDC	0V	0V	90VDC	1.3VDC	#	#
V 3	6V6GT	0V	#	320VDC	300VDC	.1VDC	0V	#	19VDC
V 4	6V6GT	0V	#	320VDC	300VDC	.1VDC	0V	#	19VDC
V 5	5Y3GT	0V	330VDC	0V	330VAC	0V	300VAC	0V	330VDC

6.3VAC measured across filaments.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	6SJ7	0Ω	250Ω	0Ω	10 Meg.	0Ω	†2.2Meg.	250Ω	†500KΩ
V 2	6SC7	0Ω	†470KΩ	10KΩ	330KΩ	†470KΩ	1.5KΩ	250Ω	250Ω
V 3	6V6GT	0Ω	250Ω	†150Ω	†3.3KΩ	460KΩ	Inf.	250Ω	250Ω
V 4	6V6GT	0Ω	250Ω	†150Ω	†3.3KΩ	470KΩ	Inf.	250Ω	250Ω
V 5	5Y3GT	Inf.	85KΩ	Inf.	54Ω	Inf.	54Ω	Inf.	85KΩ

† Measured from pin 8 of V5.

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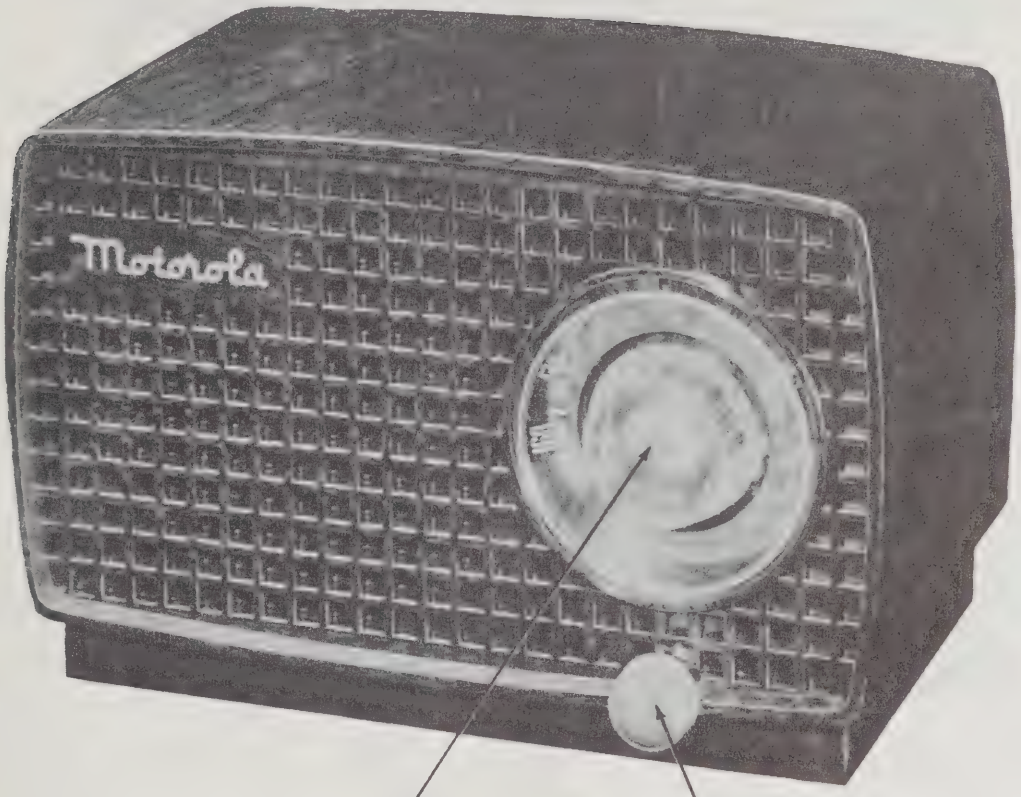
1 - DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Line voltage maintained at 117 volts for voltage readings.
5 - Nominal tolerance on component values makes possible a variation of ± 15 % in voltage and resistance readings.
6 - All controls at minimum, proper output load connected.

MOTOROLA MODELS 59R11, 59R12I, 59R13M, 59R14E, 59R15G, 59R16Y (Ch. HS-167)

MOTOROLA MODELS 59R11, 59R12I, 59R13M, 59R14E, 59R15G, 59R16Y (Ch. HS-167)



MOTOROLA MODELS 59R11, 59R12I, 59R13M, 59R14E, 59R15G, 59R16Y (Ch. HS-167)

MOTOROLA MODEL 59R11

TRADE NAME	Motorola, Models 59R11, 59R12I, 59R13M, 59R14E, 59R15G, 59R16Y (Chassis HS-167)
MANUFACTURER	Motorola Inc., 4545 Augusta Blvd., Chicago 51, Ill.
TYPE SET	AC-DC Operated Superhetrodyne Receiver with Loop Antenna.
TUBES (FIVE)	Types 12BE6 Converter, 12BA6 IF Amp., 12AT6 Det.-AVC-AF, 50C5 Power Output, 35W4 Rectifier.
POWER SUPPLY	110 - 120 Volts AC RATING .26 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	535 - 1620KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set the dial, turn the tuning gang fully closed, and set the last calibration mark on the dial knob even with the indicator mark.

Use an isolation transformer, if available. If not, connect a .1 MFD capacitor in series with the low side of the signal generator and chassis.

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1 MFD	High side to rear stator of tuning gang. Low side to chassis.	455KC (400\Mod.)	Tuning gang fully open	Across Voice Coil.	A1, A2, A3, A4	Adjust for maximum output. If isolation transformer is not used reduce dummy antenna to .001 MFD to reduce hum modulation.
2.	.1 MFD	"	1620KC (400\Mod.)	"	"	A5	Adjust for maximum output.
3.		Loop	1400KC (400\Mod.)	Tune for max. signal.	"	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.

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PARTS LIST AND DESCRIPTIONS

MOTOROLA
MODEL 59R11

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		MOTOROLA PART No.	STANDARD REPLACEMENT		
V1	Converter	12BE6	12BE6	7CH	
V2	IF Amp.	12BA6	12BA6	7BK	
V3	Det.-AVC-AF	12AT6	12AT6	7BT	
V4	Power Output	50C5	50C5	7CV	
V5	Rectifier	35W4	35W4	5BQ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA					IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	MOTOROLA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	
C1A	50	150	23K482857	PRS150/30-50	EDL-5315		TA-530	Filter - Red
B	30	150						Filter - Green
C2	.05	200	8S9821	P288-05	GT2S5		TM-15	AVC Filter
C3A	220		21B482847	1468-00025	5W5T25	GP2K-220	34C3	Diode RF Filter
B	2000			P688-002	GT6D2	GP2M-002		Audio Coupling
C	220			1468-00025	5W5T25	GP2K-220		AF Plate Bypass
D	5000			P688-005	GT6D5	GP2M-005		Audio Coupling
C4	.02	400	8S9802	P488-02	GT4S2		TM-12	Output Plate Bypass
C5	.05	400	8S9816	P488-05	GT4S5		TM-15	Line Filter

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA			INSTALLATION NOTES
	RESISTANCE	WATTS	MOTOROLA PART No.	IRC PART No.	CLAROSTAT PART No.	
R1A	1 Meg.	½	18A478122	Q13-137	15/16-63-Z	Volume Control
B	Switch		Not Req.	76-1 *	SPST Sw. #	* Attached to R1A per instructions.
						# Attached at factory.

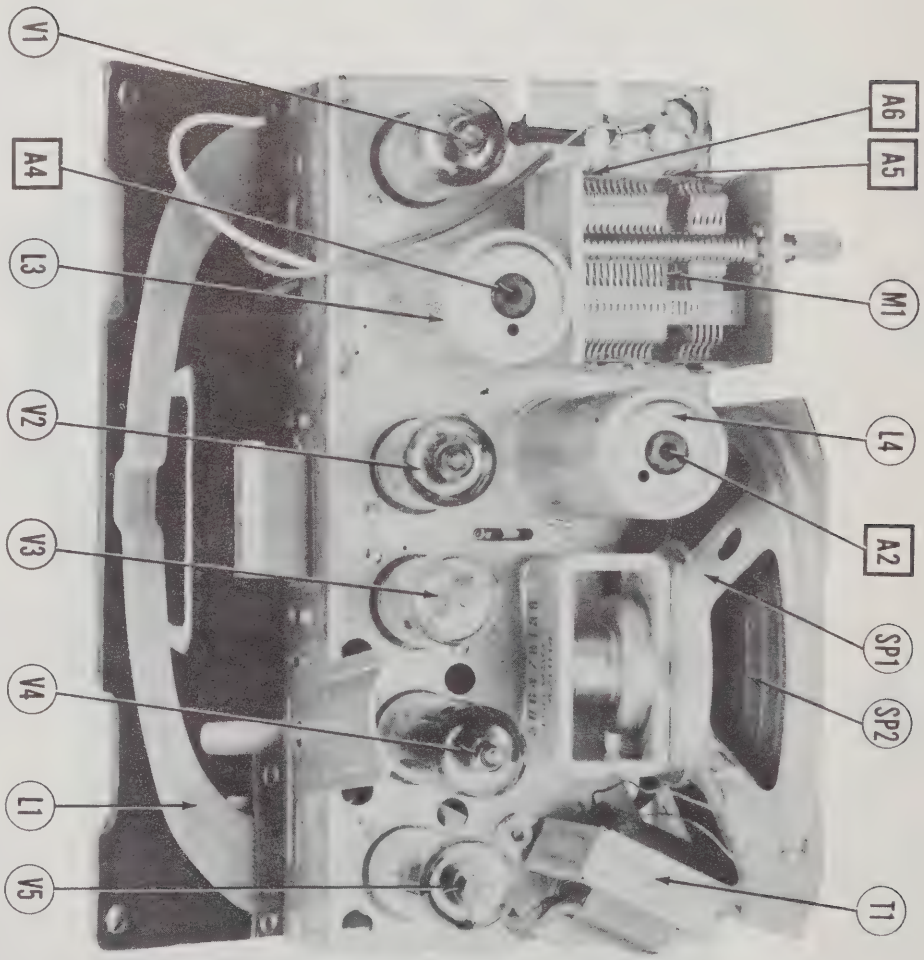
RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	MOTOROLA PART No.	IRC PART No.	
R2	22KΩ	½	6R6028	BTS-22K	Oscillator Grid
R3	100Ω	½	6R6018	BW-½-100	IF Cathode
R4	3.3 Meg.	½	6R2118	BTS-3.3 Meg.	AVC Network
R5	10 Meg.	½	6R2109	BTS-10 Meg.	AF Grid
R6	470KΩ	½	6R6032	BTS-470K	AF Plate
R7	470KΩ	½	6R6032	BTS-470K	Output Grid
R8	150Ω	½	6R3992	BW-½-150	Output Cathode
R9	1000Ω	1	6R3953	BW-1-1000	Filter
R10	27Ω	½	6R5683		Surge Limiter

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		MOTORLA PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T1	2000Ω	3.2Ω	186Ω	.5Ω	25B478121	A-3332 †	A-3025 †	RO-2 †	† Drill new mounting hole.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA: MOTOROLA PART No.	JENSEN PART No.	QUAM PART No.	INSTALLATION NOTES
	FIELD	V.C. IMP.		ST-113		
SP1	PM	3.2Ω	50C478138	Mod. P4-X	4A07	
	CONE DIA.	V.C. DIA.				
SP2	3 7/8"	9/16"				

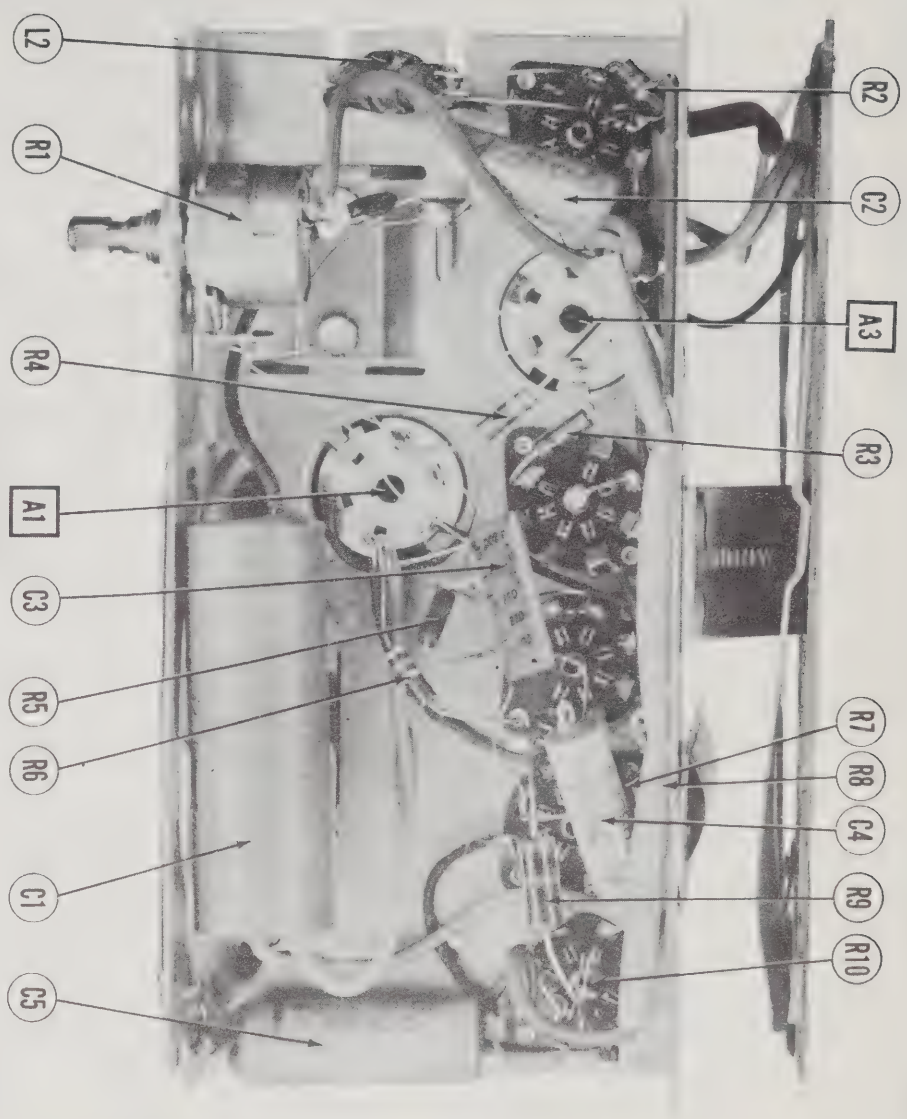
R F COILS

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: MOTOROLA PART No.	MEISSNER PART No.	
L1	Loop Ant.	3.5Ω		24K690185		Includes panel
L2	Osc. Coil	13.5Ω		24A478129		
L3	Input IF	14.5Ω	14.5Ω	24B482863 ‡	16-6678	‡ Less Shield
L4	Output IF	14.5Ω	14.5Ω	24B482865 ‡	16-6678	‡ Less Shield

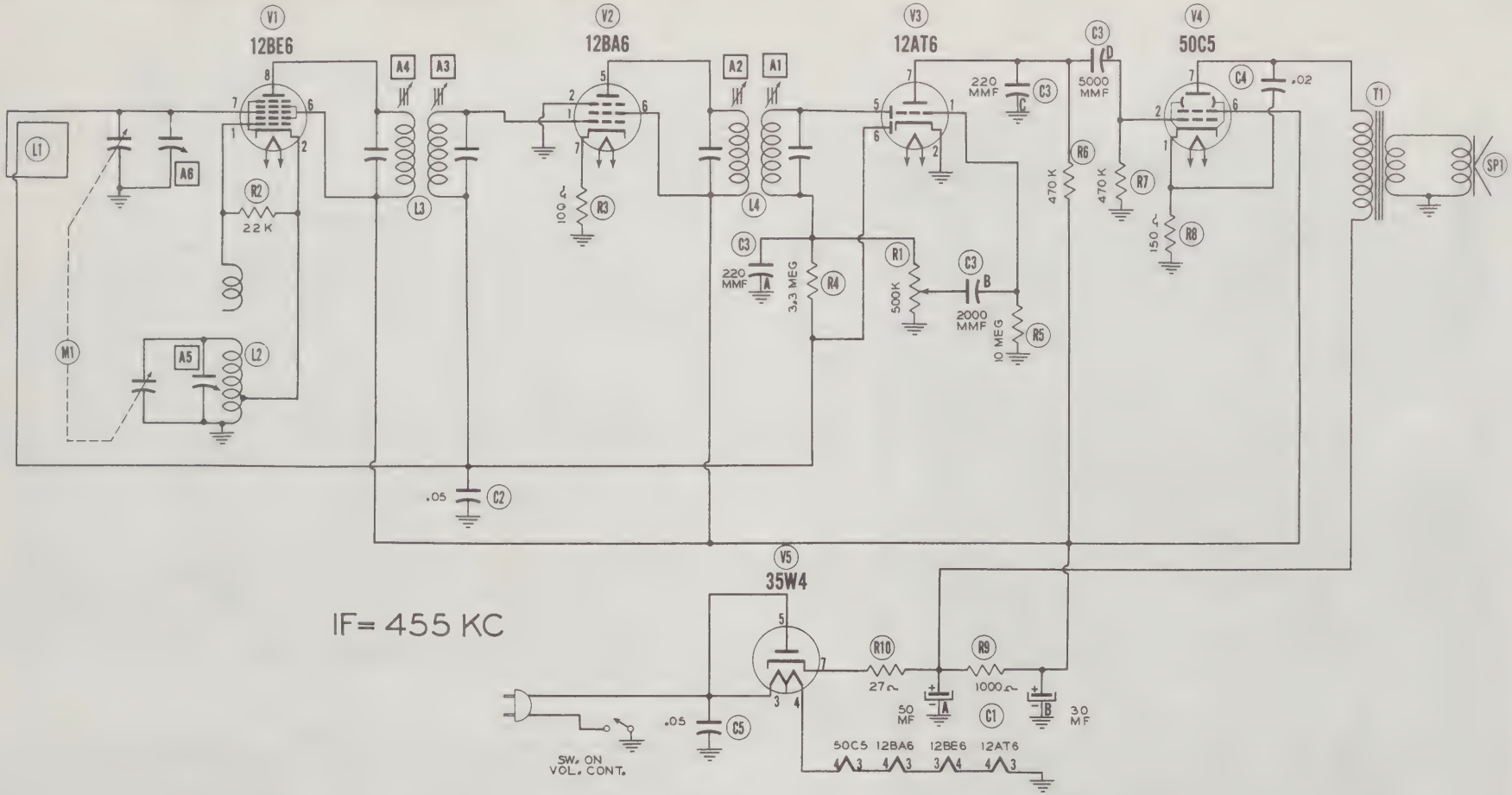
MISCELLANEOUS

ITEM No.	PART NAME	MOTOROLA PART No.	NOTES
M1	2 Gang Var. Cap.	19B478128	(24 - 387MMF, 14 - 200MMF)
	Cabinet	16D690186	Model 59R11
	Cabinet	16K690188	Model 59R12I
	Cabinet	16K690190	Model 59R13M
	Cabinet	16K690192	Model 59R14E
	Cabinet	16K690194	Model 59R15G
	Cabinet	16K690196	Model 59R16Y
	Knob	36K690454	Volume
	Knob	36B690131	Tuning - Models 59R11, 59R12I
	Knob	36K691115	Tuning - Model 59R13M
	Knob	36K691116	Tuning - Model 59R14E
	Knob	36K691117	Tuning - Model 59R15G

CHASSIS—BOTTOM VIEW



MOTOROLA MODEL 59R11



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	12BE6	§-3.3VDC	0V	24VAC	12VAC	100VDC	100VDC	-.4VDC
V 2	12BA6	-.6VDC	0V	24VAC	37VAC	100VDC	100VDC	.9VDC
V 3	12AT6	-.8VDC	0V	0V	12VAC	-.4VDC	-.6VDC	50VDC
V 4	50C5	6.8VDC	.1VDC	37VAC	85VAC	.1VDC	100VDC	120VDC
V 5	35W4	125VDC	125VDC	117VAC	85VAC	117VAC	93VAC	127VDC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	12BE6	22KΩ	.5Ω	24Ω	12Ω	†1000Ω	†1000Ω	4.3Meg.
V 2	12BA6	4.3Meg.	0Ω	24Ω	36Ω	†1000Ω	†1000Ω	100Ω
V 3	12AT6	10 Meg.	0Ω	0Ω	12Ω	1 Meg.	4.3Meg.	†470KΩ
V 4	50C5	150Ω	470KΩ	36Ω	85Ω	470KΩ	†1000Ω	†175Ω
V 5	35W4	50KΩ	50KΩ	112Ω	85Ω	112Ω	90Ω	50KΩ

† Measured from pin 7 of V5.

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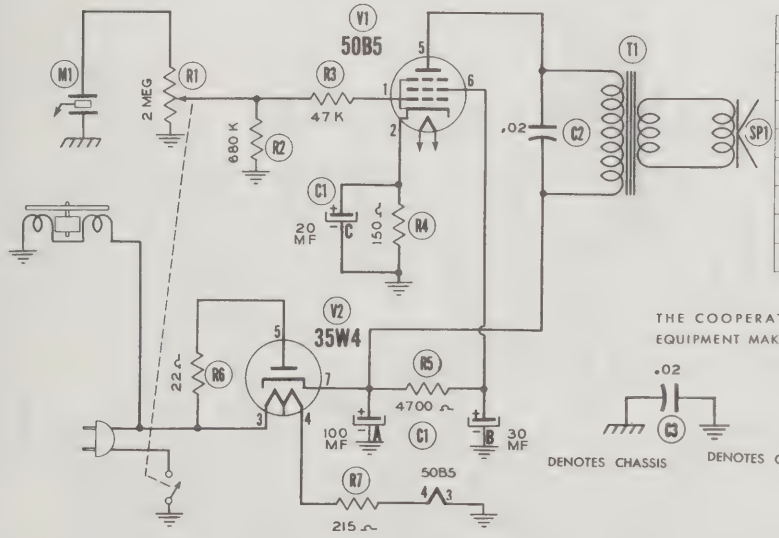
1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

PHONOLA MODEL K-105

TRADE NAME	Phonola, Model K-105
MANUFACTURER	Waters Conley Co., Rochester, Minn.
TYPE SET	AC Operated Phono Player with 2 Tube Amplifier
TUBES (TWO)	Types 50B5 Power Output, 35W4 Rectifier
POWER SUPPLY	110-120 Volts AC RATING: .26 Amp. @ 117 Volts AC



Pin No.	50B5 Volt.	50B5 Res.	35W4 Volt.	35W4 Res.
1	0V	600KΩ	0V	Inf.
2	7VDC	150Ω	0V	Inf.
3	0V	0Ω	117VAC	32Ω
4	47VAC	38Ω	80VAC	54Ω
5	120VDC	1200Ω	115VAC	52Ω
6	105VDC	14.7KΩ	87VAC	50Ω
7	0V	600KΩ	130VDC	750KΩ

† Measured from pin 7 of V2.

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79-11

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

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DATE 12/49 SET #79 FOLDER 11

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: PHONOLA PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	Power Output	9843	50B5	7BZ	
V2	Rectifier	9850	35W4	5BK	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: PHONOLA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	100	150	8396	PRSA1684D	EZ555150*		TA-309*	Filter-Blue
B	30	150					UT-301	Filter-Red
C	20	25						Output Cath. Bypass-Yellow
C2	.02	400	8399	P488-02	GT4S2		TM-12	Output Plate Bypass †
C3	.02	400	8399	P488-02	GT4S2		TM-12	Line Isolation

* Parallel sections to obtain desired capacity.
† Not used in all models.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: PHONOLA PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
R1A	2 Meg.	½		Q13-139	M-66-Z	Volume control
B	Switch			76-1	SW-A	Attach to R1A per instructions

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: PHONOLA PART No.	IRC PART No.	IDENTIFICATION CODES
R2	680KΩ	½	8402	BTS-680K	Output Grid
R3	47KΩ	½		BTS-47K	Output Grid
R4	150Ω	½	8404	BW-½-150	Output Cathode, Wire Wound
R5	4700Ω	1	8403	BW-1-470C	Filter
R6	22Ω	½	8432		Rect. Ballast, Wire Wound
R7	215Ω	5	8401		Filament Dropping, Wire Wound

TRANSFORMER (AUDIO OUTPUT)

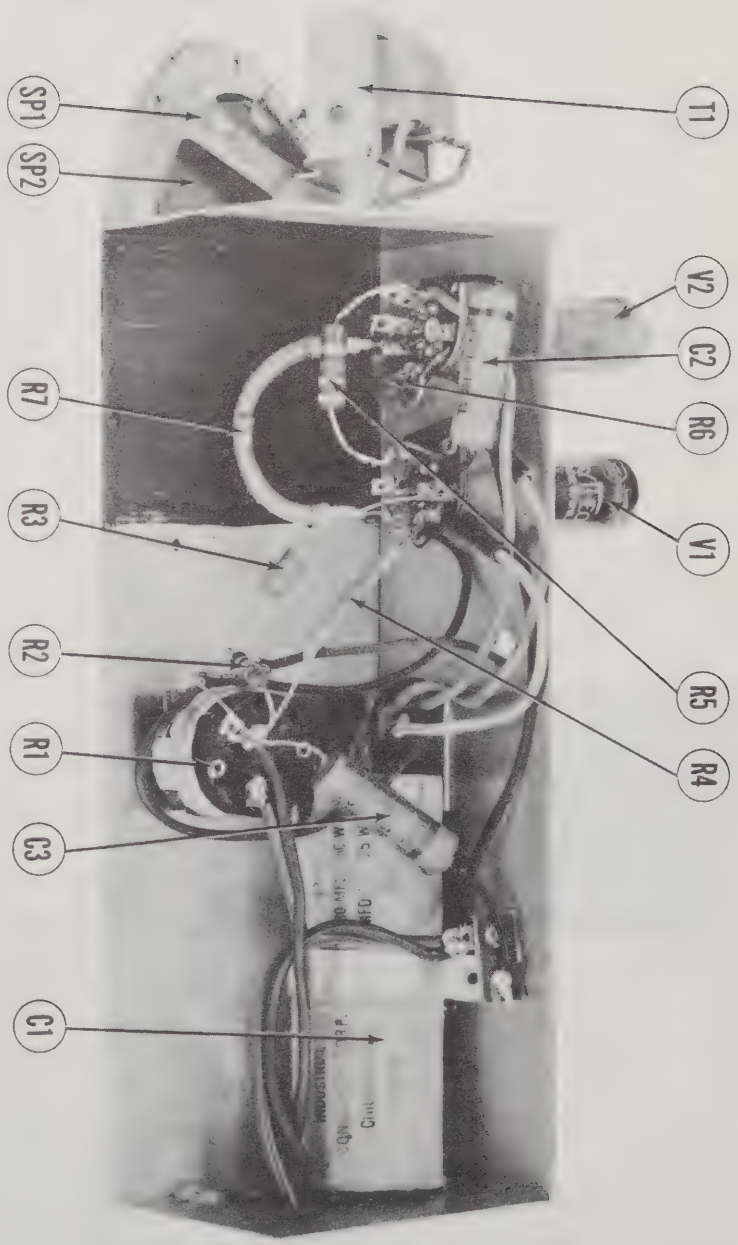
ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: PHONOLA PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
T1	2100Ω	3.4Ω	200Ω	.5Ω	9852	A-3876	A-2928	RO-2	

SPEAKER

ITEM No.	RATINGS	REPLACEMENT DATA: PHONOLA PART No.	JENSEN PART No.	QUAM PART No.	INSTALLATION NOTES
	FIELD — V. C. IMP.		ST-105 ①		
SP1	PM — 3.4Ω	8784	MOD.P5-X	5A07 ①	① Remount output transformer.
	CONE DIA. — V. C. DIA.				
SP2	4 3/4" — 9/16"				

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA: PHONOLA PART No.	ASTATIC PART No.	REMARKS
M1		L-32-A	



TOP VIEW

GENERAL INFORMATION

This changer is a single-post changer designed to play automatically a series of records up to and including twelve 10-inch or ten 12-inch records, not intermixed. This changer has an "eccentric" type tripping mechanism. The last record will be repeated until the changer is turned off.

CAUTIONS

1. Avoid handling the pickup arm or sliding the record support assembly while the mechanism is in cycle.
2. Never turn the power switch off, leaving the mechanism in cycle for an extended period of time.
3. Do not allow the records to remain on the supports when not in use.
4. Do not allow oil or grease to come in contact with any rubber parts.
5. Do not install instrument near source of heat. Excessive heat may damage the pickup cartridge.

Manufactured by **RADIO CORPORATION OF AMERICA**

RCA VICTOR DIVISION • CAMDEN, N. J.

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RCA
MODEL RP178

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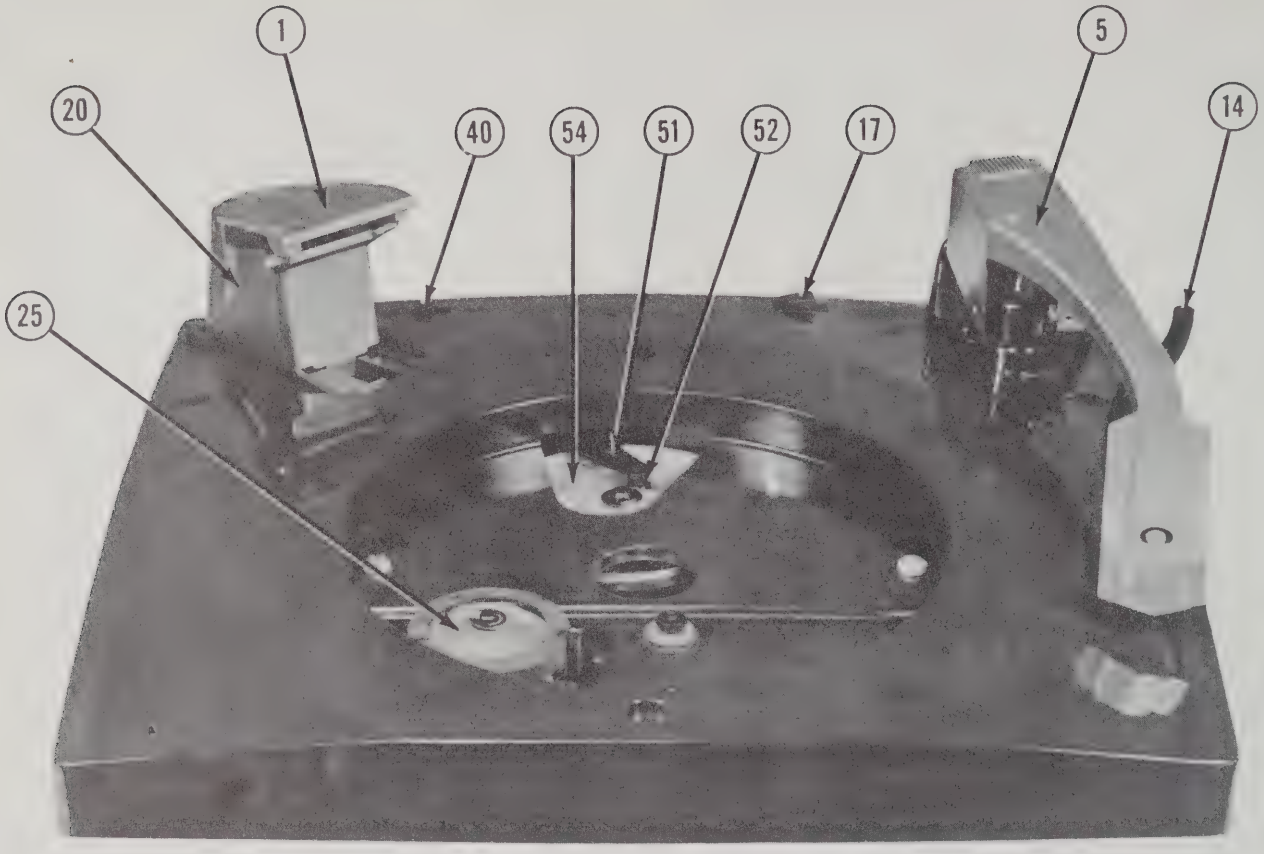


TOP VIEW

AUTOMATIC OPERATION

1. With the power switch (40) in the "off" position, tilt the record support (20) forward; as a result, the record support may now be moved forward for 10-inch setting, or away from the spindle for 12-inch setting.

2. Place a stack of records on the spindle and rest them on the record support shelf.

3. Lower the stabilizing clamp on top of the records.

4. Turn the power switch (40) on and press the reject button (17). The changer will now automatically play the entire stack of records.

5. Any record may be rejected while playing by pressing the reject button.

6. On completion of the last record, allow the changer to go through its cycle, returning the pickup arm to the record. Move the pickup arm to the arm rest (14), and turn the power switch off.

7. Remove the records.

MANUAL OPERATION

1. Place the record to be played on the turntable and turn the power switch on.

2. Place the pickup arm on the record.

3. On completion of the record, allow the changer to go through its cycle before placing the pickup arm on the arm rest.

4. Turn the power switch off and remove the record.

CHANGE CYCLE

The change cycle may be started by moving the reject lever (17), which, in turn, contacts and moves the ratchet lever (72). The ratchet lever then unlatches the stud on the cam mounting carriage (82). This allows the tension spring (61) to pivot the cam mounting carriage, bringing the main cam (54) in contact with the rotating knurled roller of the turntable, thus starting the change cycle.

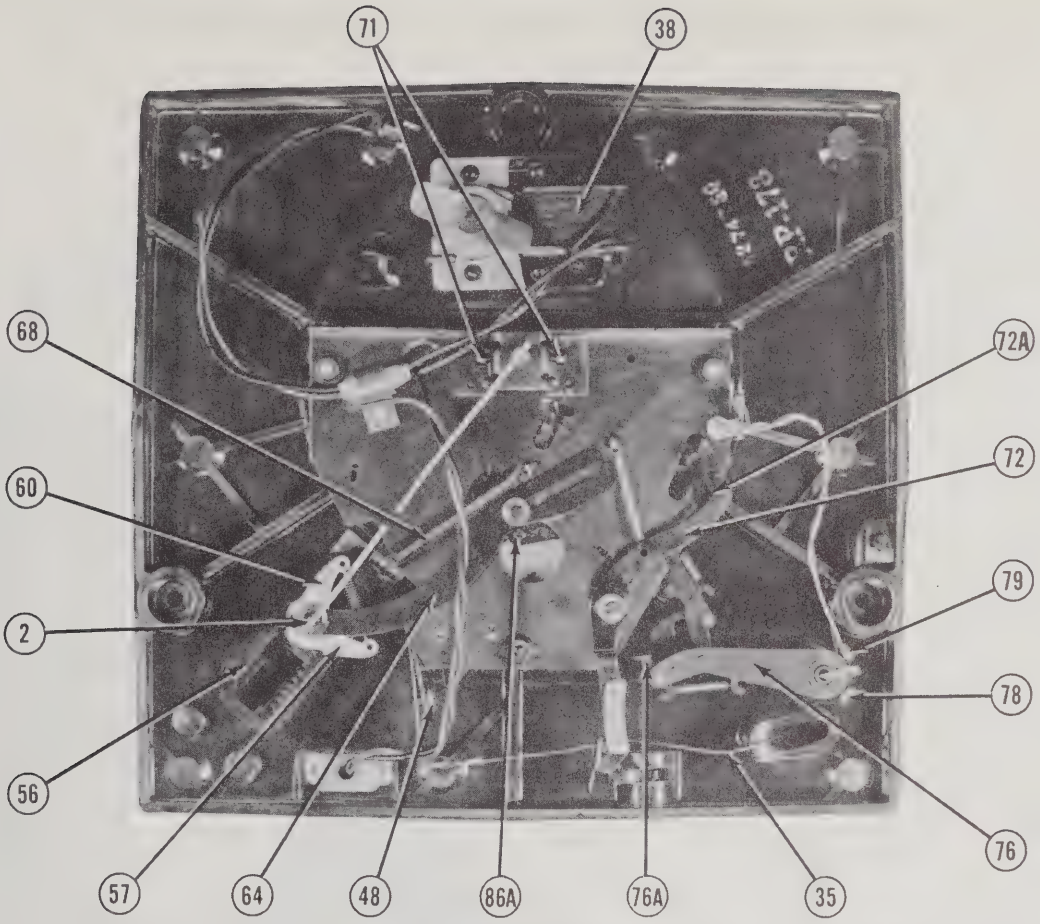
As the main cam turns, the stud of the return lever (86), following the cam track on the bottom of the main gear, moves the return lever to its outward position.

The roller (52) of the pickup arm lift director lever (51), following the cam surface (54A), actuates the lift lever which, in turn, pulls on the lift cable (35); this cable is connected to the pickup arm (5).

The hole (33A) in the base plate (33) serves as a guide for the cable and is placed so as to allow the cable to pull slightly at an angle of 90°. This gives the necessary rising and outward motion of the pickup arm.

The trip lever (76), which is fastened to the pickup arm shaft (11), moves with the pickup arm; therefore, when the trip lever is moved out, the pin of the trip lever (76) engages the pickup arm return lever and latch (86), which, as a result, holds the pickup arm in its outermost position.

The eccentric elevated cam on the bottom of the



BOTTOM VIEW

main cam (54) now actuates the rack lever (56), pushing it backward.

The sliding effect of the rack lever rotates the cam and shaft lever (57), which, in turn, rotates the cam and shaft lever (60) and the separator cam and shaft (2), thereby pushing a record off the step in the centerpost and dropping it to the turntable.

As the main cam continues to turn, the rack lever (56) is reversed in movement and returns the separator cam and shaft (2) to its original position.

The pin of the mounting carriage lever (82) moves into the step (72A) of the ratchet lever (72).

As the main cam continues to rotate, the director lever (51), following the cam track (54A), is gradually allowing slack in the lift cable (35). At the same time the director lever is moving, the return lever (86) pushes against the pin of the trip lever (76), thereby retaining the slack in the lift cable while returning the pickup arm to the landing position. The positioning of the pickup arm is determined by the distance the return lever (86) travels before the stud (86A) of return lever makes contact with the locating lever (64) shown in the photograph of the "Bottom View."

The director lever (51) continues to move giving slack to the lift cable, which, as a result, lowers the pickup arm to the record.

As the sapphire moves into the playing groove of the record, the main cam (54) becomes disengaged with the knurled roller of the turntable as the knurled roller falls into the step of the main cam. The pin of the mounting carriage lever (82) now engages the step (72A) of the ratchet lever (72). This engagement prevents the main cam from making contact with the knurled roller, thus completing the change cycle.

As the pickup arm moves across the record into the eccentric groove, the oscillation of the pickup arm in the eccentric groove causes the trip pawl (76A) to engage the ratchet lever (72) starting a new change cycle.

ADJUSTMENTS

Pickup Arm Height Adjustment

1. With the changer out of cycle move the pickup arm to a position off the edge of the record and allow it to rest freely in the air.

2. Bend the end of the pickup arm bracket (11) so that the sapphire is 3/16" above the flat surface of the base plate.

3. Make the adjustment while the changer is in cycle with the pickup arm at its maximum height.

4. Turn the adjusting screw (48) of the lift director lever (51) until the sapphire is 1⅜" above the turntable.

5. If this adjustment cannot be reached by the adjusting screw, take up on the cotter pin (47) and, then, for a finer adjustment, turn the adustment screw (48).

Pickup Arm Setdown Point

1. Move the record support (20) forward to the 10-inch position.

A PHOTOFACT "EXPLODED" VIEW

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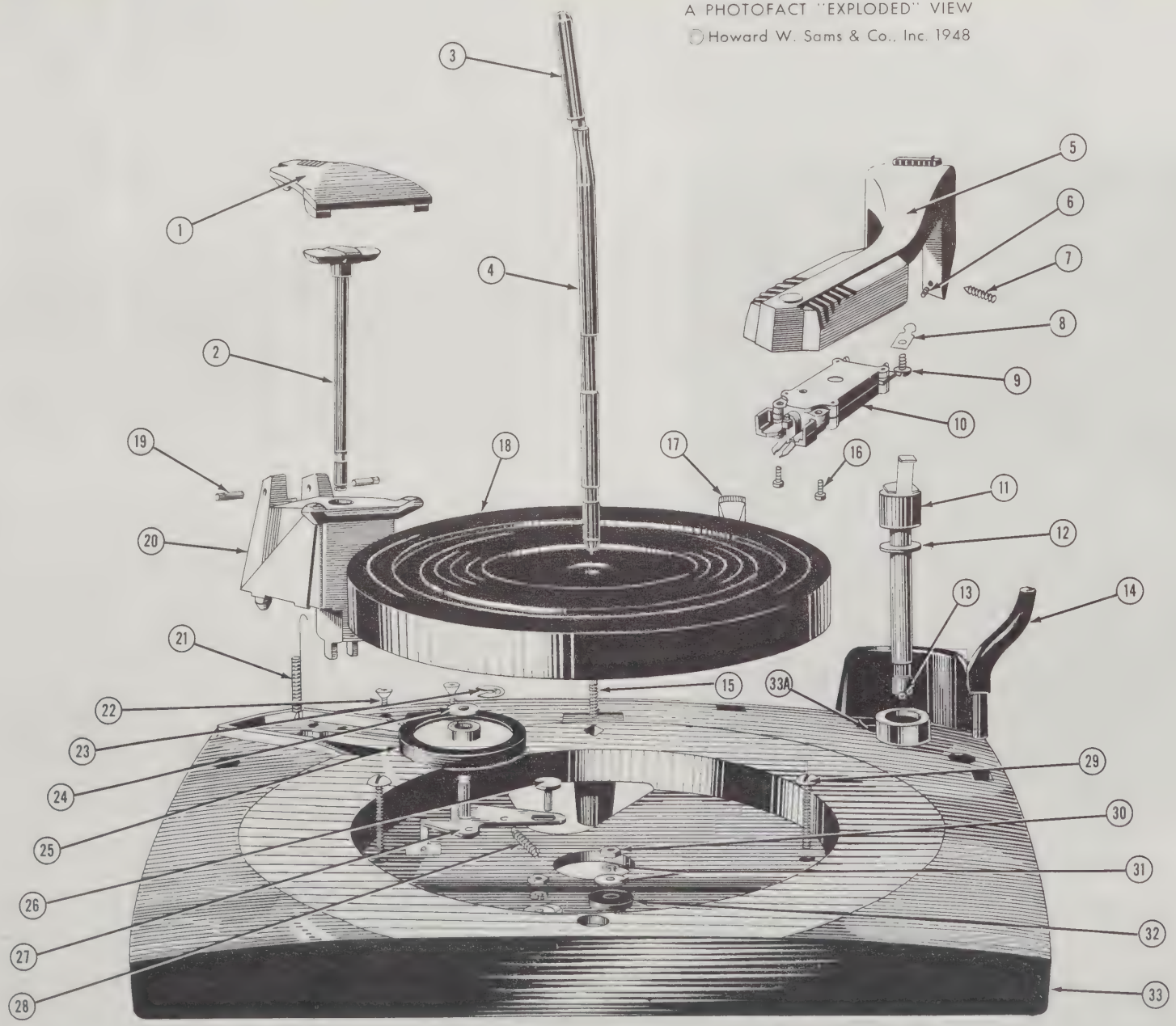

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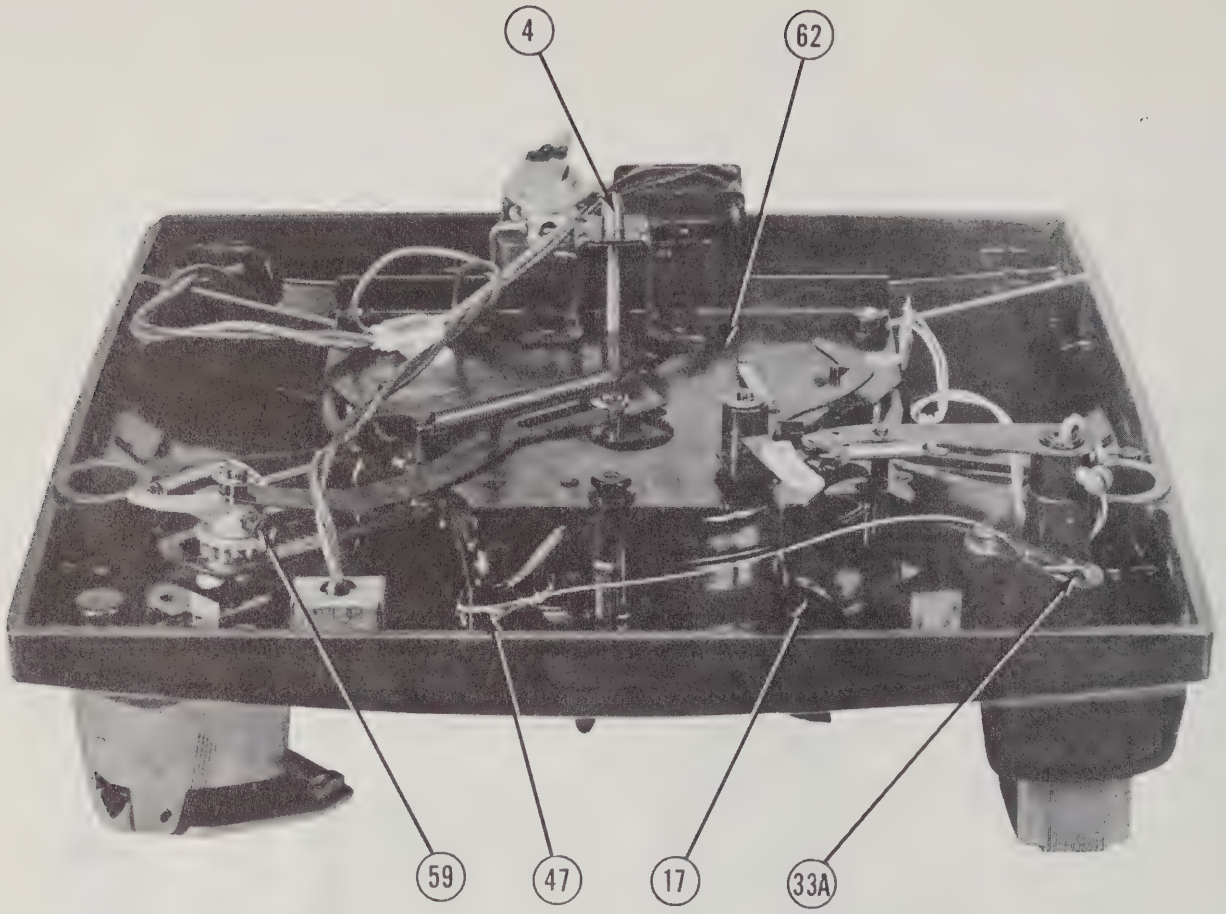


BOTTOM—REAR VIEW

2. Place a 10-inch record on the turntable.

3. Press the reject button (17) and rotate the turntable by hand, until the sapphire is just ready to land on the record.

4. Loosen the set screws (78 and 79).

5. Hold the pin of the trip lever (76) against the return lever (86) and move the pickup arm to the proper landing position.

6. Tighten the black set screw and run the changer through cycle automatically. If the adjustment is correct, tighten the copper-plated screw.

7. This adjustment is sufficient for the 12-inch setdown.

Centering of the Turntable

If the sub-assembly has been removed from the base plate, it is necessary to re-center the turntable:

1. Loosen the sub-assembly mounting screws.

2. Put the turntable in place with the spindle down through the mounting.

3. Center the turntable, in respect to the recess in the base plate, by moving the sub-assembly (62).

4. Tighten the nut on the end of the square head mounting screw (15).

5. Remove the turntable and tighten the other two mounting screws.

6. To replace the turntable and spindle, slip the turntable over the lower end of the spindle until it comes against the stop on the spindle.

7. Place the thrust bearing (83) and washers (84 and 81), as shown in the exploded view, on the spindle.

8. Place the spindle in its mounting in the sub-assembly.

9. Turn the spindle so that its step is away from the record support.

10. Tighten the screws (71).

Push Cam and Gear Assembly

1. Have the mechanism out of cycle.

2. Place the record support (20) in the 10-inch position.

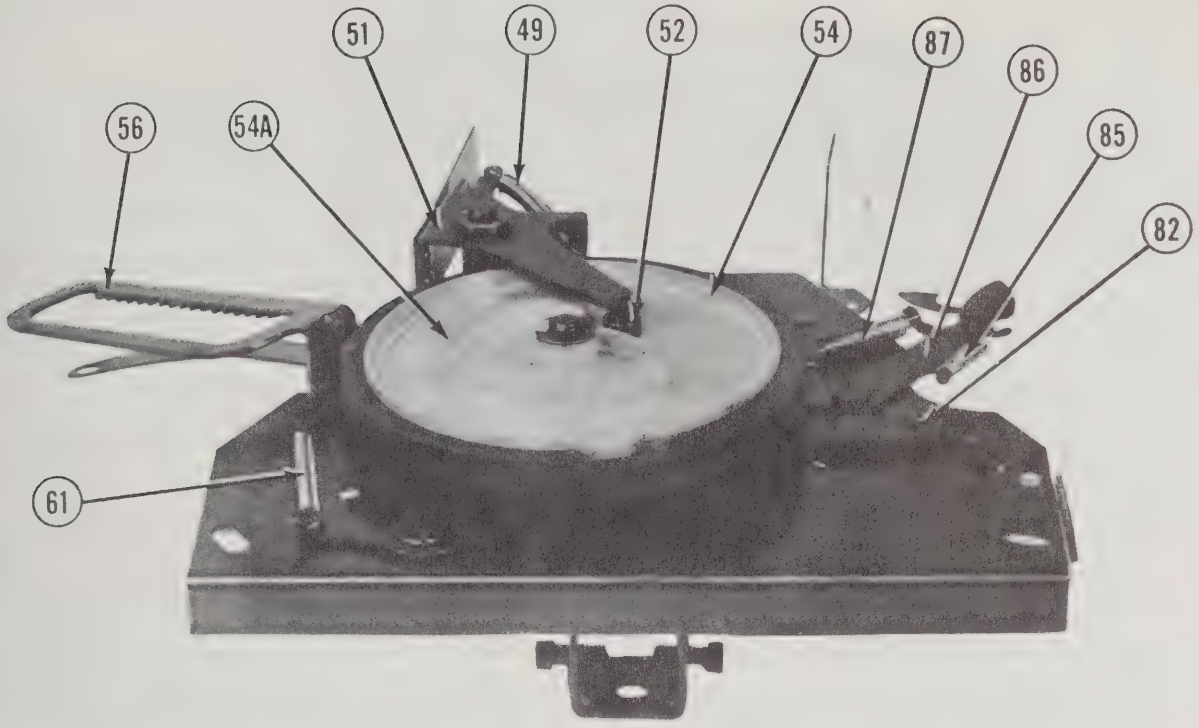
3. In assembling the push cam (57 and 60) with the rack lever (56), engage the push cam (57) with the teeth of the rack lever so that the eye of the push cam (60) is approximately in line with the spindle, as shown in the picture of the "Bottom View."

4. Set the separator cam (2) parallel to the front edge of the record support (20). Make certain the thin edge of the separator cam (2) is on the left side, viewed from the front of the record support.

TROUBLES

Pickup Arm Fails to Set Down Properly

1. Stud (86A) of the return lever (86) loose.
2. The locating lever (64) bent.
3. The pin of the trip lever (76) bent or loose.
4. The landing adustment improperly set (see adjustment on "Pickup Arm Setdown Point").
5. Spring (87) loose or missing.
6. Binding in the pickup arm shaft (11).



SUB-BASE INCLUDING MAIN CAM AND LIFT LEVER

Turntable Speed Slow or "Wow"

1. Idler spring (28) weak or loose.
2. Knurled roller of the turntable touching the rubber tire of the main cam (54).
3. Grease and foreign matter on the idler wheel (25) and the turntable rim.
4. Defective motor.

Stalls During Change Cycle

1. Defective cam tire (54).
2. Grease on the idler wheel (25) or rim of the turntable.
3. Insufficient tension on spring (28).
4. Spring (61) loose or missing.
5. Defective motor (38).

Records Do Not Separate or Drop Properly

1. The record guide (3) binding in an up position, thereby allowing more than one record to drop at a time.
2. The record separator cam (2) loose or improperly set.
3. Spindle (4) not aligned properly.
4. Spindle bent.
5. Spring (86) loose.

Failure to Trip

1. Trip pawl (76A) binding.
2. Spring (80) loose or missing.
3. Defective ratchet on the ratchet lever (72).
4. Spring (61) loose or missing.
5. Trip lever (76) loose on shaft (11).

Continuous Tripping

1. Spring (87) loose.
2. Pin of the cam carriage (82) loose.
3. Step (72A) of the ratchet lever (72) defective.

Premature Tripping

1. Pin of the cam carriage (82) loose.
2. Spring (75) loose or missing.
3. Spring (80) too strong.
4. Blunt edge on the trip pawl (76A).

LUBRICATION

Lubrication applied at the time of manufacture is usually sufficient for a long period of time; however, if lubrication becomes necessary, use SAE No. 10 motor oil to saturate the felt wicks on the motor bearings. Use Sta-Put No. 512 or SAE No. 30 motor oil on the main bearing. Use Sta-Put No. 512 on the slides and levers. Wipe off all excess lubricant; over-lubrication is unwise. Do not allow grease or oil to come in contact with the inner rim of the turntable or the rubber surfaces of the idler wheel on the main cam.

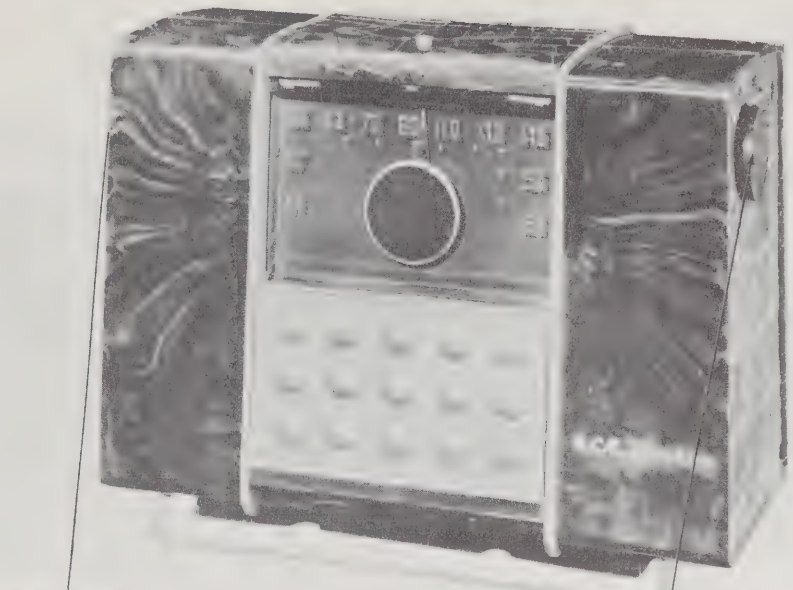
Any oil or grease at these points should be removed with carbon tetrachloride.

PARTS LIST

Ref. No.	Part No.	DESCRIPTION
1	.....	Record clamp (part of No. 20)
2	72356	Record separator cam and shaft
3	.....	Record guide (part of No. 4)
4	72346	Turntable spindle
5	72338	Pickup arm shell only
6	72342	No. 4-40 x 3/16" F.H.M.S.
7	72341	Pickup arm pivot pin
8		Lift cable tie plate nut (part of No. 35)
9	72340	No. 8-32 x ¼" R.H.M.S.
10	72551	Crystal cartridge including sapphire and guard
	72345	Sapphire
	70341	Mounting washer and nut
	38451	Needle guard
	37763	No. 2-56 x ⅛" screw for needle guard
11	72339	Pickup arm shaft
12	72348	Thrust washer (.580" O.D. x .300" I.D.)
13	10941	Steel ball (⅛" dia.)
14	72383	Pickup arm rest
15	72364	No. 10-32 x 1½ square head screw to mount sub-base
16	70912	No. 4-40 x ⅜" crystal mounting screw
17	72385	Reject lever
18	72355	Turntable complete with knurled bushing and rubber mat
	72564	Rubber mat only
19		Record clamp pivot pin (part of No. 20)
20	72390	Record support assembly (including Ref. Nos. 1 and 19)
21	72357	Record support and clamp spring (.200" O.D. x 1 31/32-37¼ turns)
22	72389	Power switch mounting screws
23	33726	"C" washer
24	39996	Fiber washer
25	72396	Idler wheel
26	72388	Mounting stud for idler wheel arm
27	72395	Idler wheel arm and mounting lever
28	72393	Idler spring (.195" O.D. x 11/16"—17 turns)
29	72347	Sub-base mounting screw set, consisting of 2 screws, 3 washers, 3 lockwashers and 3 nuts
30	72387	Motor mounting hardware, consisting of 6 flat washers Ref. No. 37, 3 spacers Ref. No. 36, 3 lockwashers Ref. No. 31, and 3 nuts Ref. No. 30
31		Lockwasher (part of Ref. No. 30)
32	72384	Motor mounting grommet
33	72382	Base plate
34	33225	Speed nut for mounting pickup arm rest
35	72343	Pickup arm lift cable complete (including tie plate Ref. No. 8 and cotter pin Ref. No. 47)
36		Motor mounting spacer (part of Ref. No. 30)
37		Flat washer (part of Ref. No. 30)
38	72394	Motor—117 volts, 60 cycles
39	38458	Speed nut for idler wheel arm stud
40	32875	"On-off" switch
41	72391	Record support clamp assembly (including clamp Ref. No. 41, lockwashers Ref. No. 42, screw Ref. No. 43, and plate Ref. No. 44)
42		Lockwasher (part of Ref. No. 41)
43		Mounting screw (part of Ref. No. 41)
44		Plate (part of Ref. No. 41)
45	35969	"C" washer
46	72381	Flat washer (½" O.D. x .290" I.D.)
47	72386	Cotter pin
48	72379	8-32 x 3/16 round head adjusting screw for lift lever
49	72376	Lift lever spring (.195" O.D. x 1 3/32"—40¼ turns)
50	35969	"C" washer
51	72378	Pickup arm lift director lever
52	72380	Cable lever roller
53	70877	Brass washer (7/16" O.D. x .280" I.D.)
54	72368	Main cam (including tire)
	72369	Rubber tire only
55	72354	Flat washer (29/32" O.D. x .220 I.D.)
56	72371	Rack lever
57	72361	Record push cam shaft lever
58	72362	Record push cam shaft levers connecting spring (.242" O.D. x 1"—19½ turns)
59	72353	No. 8-32 x 5/16" fillister head set screw
60	72360	Record push cam shaft lever
61	72367	Cam mounting plate spring (.195" O.D. x 1.167—38¼ turns)
62	73071	Sub-base plate, including Ref. No. 82 and Ref. No. 86)
63		Flat washer (part of Ref. No. 29)
64	72352	Pickup arm locating lever
65	70877	Brass washer (7/16" O.D. x .280" I.D.)
66	35969	"C" washer
67		Nut (part of Ref. No. 29)
68	72370	Rack lever spring (.233" O.D. x 1-11/16—53 turns)
69	72351	Brass washer (7/16" O.D. x .195" I.D.)
70	33726	"C" washer
71	72363	No. 8-32 x 7/16" fillister head set screws to fasten spindle
72	72377	Ratchet lever
73	72351	Brass washer (7/16" O.D. x .195" I.D.)
74	33726	"C" washer
75	72372	Ratchet lever spring (.170" O.D. x 1 1/32"—80 turns)
76	72358	Trip lever
76A		Trip pawl (part of Ref. No. 76)
77		Nut (part of Ref. No. 29)
78	39772	No. 10-32 x 5/16" fillister head set screw
79	32869	No. 10-32 x 5/16" fillister head machine screw
80	72359	Trip lever spring (.165" O.D. x ⅞"—62 turns)
81	72350	Thrust washer (.750" O.D. x .285" I.D.)
82		Cam mounting carriage (part of Ref. No. 62)
83	72349	Thrust bearing
84	72350	Thrust washer (same as 81)
85	72374	Return lever latch spring (.165" O.D. x 9/16"—28 turns)
86		Pickup arm return lever and latch (part of Ref. No. 62)
87	72375	Return lever spring (.195" O.D. x ⅞"—26 turns)

RCA VICTOR
MODEL 9BX56 (Ch. RC-1068)
(BATTERY-LINE OPERATED)

RCA VICTOR
MODEL 9BX56 (Ch. RC-1068)
(BATTERY-LINE OPERATED)



RCA VICTOR
MODEL 9BX56 (Ch. RC-1068)
(BATTERY-LINE OPERATED)

RCA VICTOR MODEL 9BX56

TRADE NAME	RCA Victor, Model 9BX56 (Ch. RC-1068)
MANUFACTURER	RCA Victor Div. of Radio Corp. of America, Camden, New Jersey
TYPE SET	Three Power Operated Portable Superheterodyne Receiver with Loop Antenna
TUBES (FOUR)	Types 1R5 Converter, 1U4 IF Amp., 1U5 DET-AVC-AF, 3V4 Power Output
POWER SUPPLY RATING:	110-120 Volts AC-DC or 7.5 Volts "A" Supply and 67.5 Volts "B" Supply .17 Amp. @ 117 Volts AC or 60MA @ 7.5 Volts DC and 8.5MA @ 67.5 Volts DC
TUNING RANGE—BROADCAST	540-1600KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set dial pointer, turn the tuning gang fully closed and set the pointer to the calibration mark on the left hand side of the dial backplate.

Loop should be maintained in same relative position to chassis as when receiver is in cabinet.

Use battery power when available. If AC power is used, use an isolation transformer when available. If not, connect a .1MFD capacitor in series with low side of the signal generator and B-.

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	Disconnect loop and remove chassis. Connect a 1000 ohm resistor across the antenna section of the tuning gang.						
2.	39MMF	High side to rear stator of tuning gang. Low side to B-.	455KC (400~ Mod.)	Point of non interference at high freq. end of dial.	Across voice coil	A1,A2, A3,A4	Adjust for maximum output.
3.	Remove the 1000 ohm resistor. Replace but do not fasten chassis in cabinet. Re-connect loop antenna.						
4.		Loop	1630KC (400~ Mod.)	Tuning gang fully open	Across voice coil	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
5.		Loop	1400KC (400~ Mod.)	1400KC	"	A6	"
6.		Loop	600KC (400~ Mod.)	600KC	"	A7	Rock tuning gang and adjust for maximum output. Repeat steps 4, 5, and 6.

HOWARD W. SAMS & CO., INC. • Indianapolis 7, Indiana

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PARTS LIST AND DESCRIPTIONS

RCA VICTOR
MODEL 9BX56

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: RCA PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	Converter	1R5	1R5	7AT	
V2	IF Amp.	1U4	1U4	6AR	
V3	DET.-AVC-AF	1U5	1U5	6BW	
V4	Power Output	3V4	3V4	6BX	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: RCA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A			74118	AF1545/28A	C16			◓ Filter
B								■ Filter
C	160	25						▲ Filament Bypass
D	40	25						▲ Filament Bypass
C2	.05	400	73553	P488-05	GT4S5		TM-15	AVC Filter
C3	56		71924	1468-00005	5W5Q5	GP1K-56	1FM-45	Osc. Grid Cap.
C4	.003	200	73961	P285-003	GT6D3	GP2M-003	68P3	AVC Filter
C5	.05	100	71551	P285-05	GT2S5		68P16	Filament Bypass
C6	.1	100	73784	P285-1	GT2P1		68P17	Filament Bypass
C7	.05	200	54859	P285-05	GT2S5		68P16	Osc. Anode Bypasss
C8	4		73153					Fixed Trimmer
C9	.002	200	73750	P285-002	ZYW4D2	GP2M-002	68P27	Audio Coupling
C10	100		73152	1468-0001	5W5T1	GP2K-100	1FM-31	AF Plate Bypass
C11	.01	200	71923	P285-01	ZNW4S1	821-01	68P14	RF Bypass
C12	.02	100	91928	P285-02	ZYW1S3	ZYW153	68P15	AF Screen Bypass
C13	.002	200	73750	P285-002	ZYW4D2	GP2M-002	68P27	Audio Coupling
C14	.005	400	72791	P485-005	ZYW4D5	GP2M-005	68P6	Output Plate Bypass
C15	.1	400	70517	P488-1	GT4P1		72P12	Line Isolation
C16	.05	400	73553	P488-05	GT4S5		TM-15	Line Filter

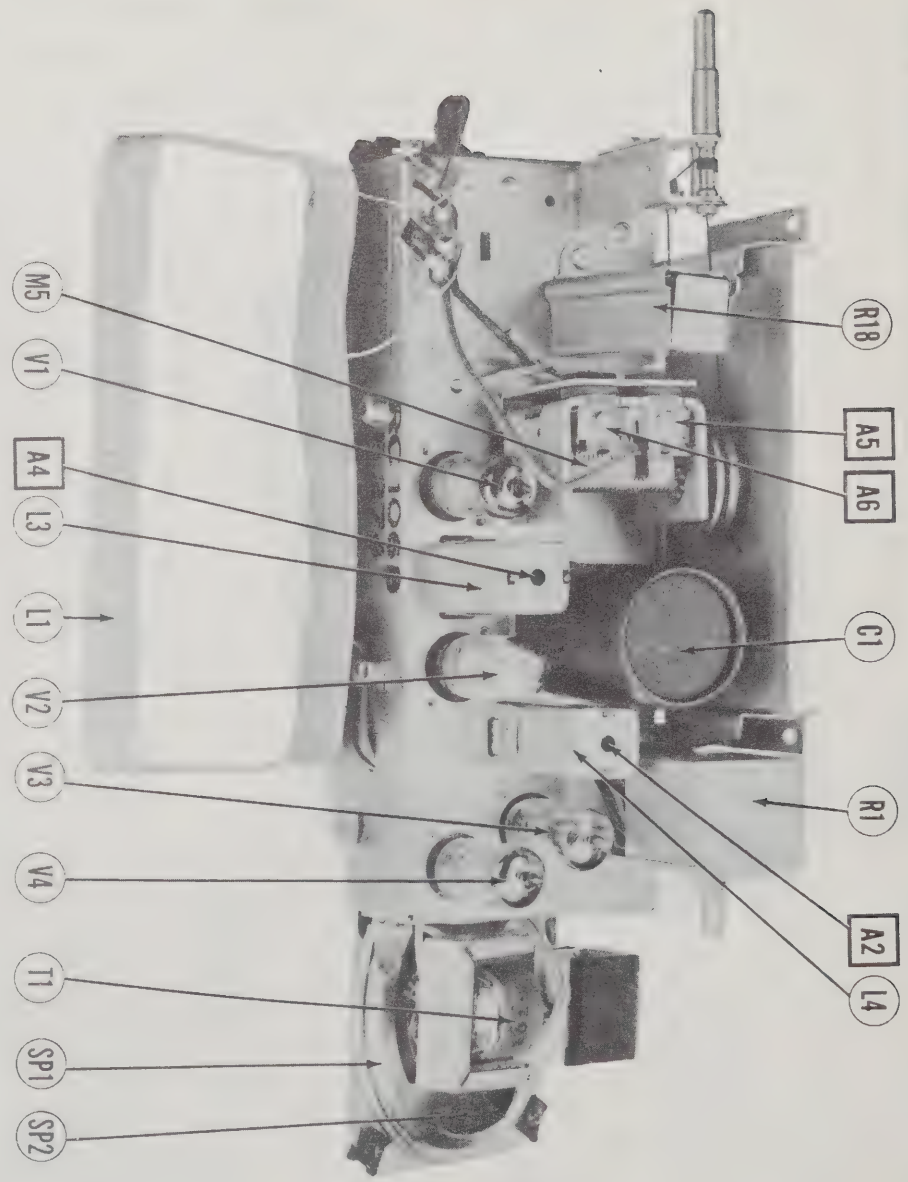
CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: RCA PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
R1A	1 Meg.		73128	Q13-137		Volume control
B	Switch		Not Req.	76-1		Attach to R1A per instructions

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: RCA PART No.	IRC PART No.	IDENTIFICATION CODES
R2	100KΩ	½		BTS-100K	Osc. Grid
R3	1000Ω	½		BTS-1000	Filament String
R4	6.8 Meg.	½		BTS-6.8 Meg.	AVC Network
R5	10 Meg.	½		BTS-10 Meg.	IF Grid
R6	2.7 Meg.	½		BTS-2.7 Meg.	AVC Network
R7	1000Ω	½		BTS-1000	Filament String
R8	39KΩ	½		BTS-39K	Osc. Anode Decoupling
R9	4.7 Meg.	½		BTS-4.7 Meg.	AVC Network
R10	100KΩ	½		BTS-100K	Diode Filter
R11	10 Meg.	½		BTS-10 Meg.	AF Grid
R12	4.7 Meg.	½		BTS-4.7 Meg.	AF Screen
R13	2.2MΩ	½		BTS-2.2M	AF Plate
R14	1 Meg.	½		BTS-1 Meg.	Output Grid
R15	1000Ω	½		BTS-1K	Filament String
R16	1000Ω	½		BTS-1000	Filament String
R17	15KΩ	½		BTS-15K	Bleeder
R18	2700Ω	7	74319		Filter (Wire Wound)
R19	3300Ω	½		BTS-3300	Filter
R20	33Ω	½	73237		Surge Limiter (Wire Wound)

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING IMPEDANCE PRI.	RATING IMPEDANCE SEC.	RATING DC RES. PRI.	RATING DC RES. SEC.	REPLACEMENT DATA RCA PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
T1	10KΩ	3.7Ω	400Ω	.4Ω	71047	A-3879 †	A-2932 †	RO-16 †	† Bend mounting tabs down and mount on original bracket.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA RCA PART No.	JENSEN PART No.	QUAM PART No.	INSTALLATION NOTES
SP1	FIELD	V. C. IMP.	74411	ST-113 ‡ MOX.P4-X	4A07 ‡	‡ Remount output transformer.
	IM	3.7Ω				
SP2	CONE DIA.	V. C. DIA.				
	3 7/8"	9/16"				

R F COILS

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA RCA PART No.	MEISSNER PART No.
L1	Loop Ant.	3.3Ω		74326	
L2	Osc. Coil	2Ω	8.5Ω	73114	
L3	Input IF	20Ω	20Ω	73129	16-6663
L4	Output IF	16Ω	16Ω	73130	16-6669

SELENIUM RECTIFIER

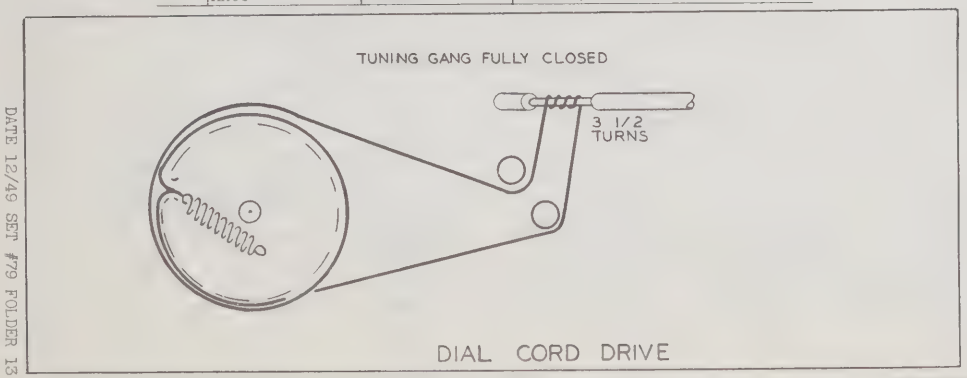
ITEM No.	RATING CURRENT	REPLACEMENT DATA RCA PART No.	SYLVANIA PART No.		NOTES
M1	.062A	74322			

BATTERIES

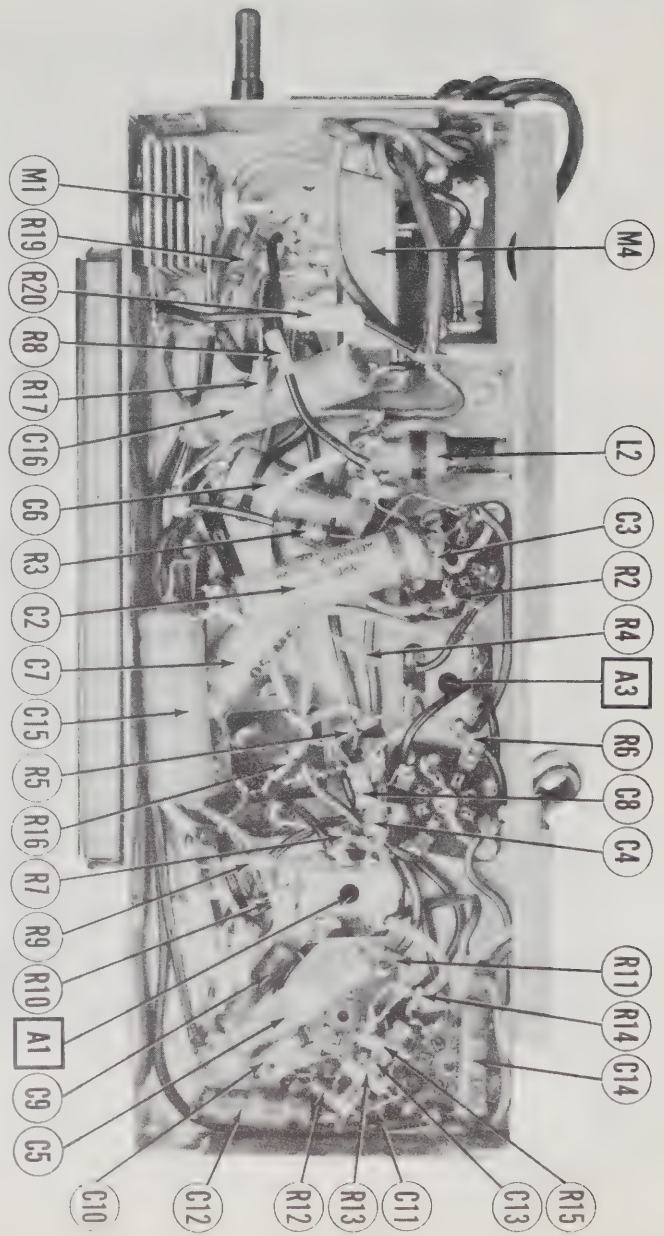
ITEM No.	VOLTAGE	RCA PART No.	REPLACEMENT DATA EVEREADY "A"	EVEREADY "B"	EVEREADY "A-B"	BURGESS "A"	BURGESS "B"	BURGESS "A-B"	INSTALLATION NOTES
M2	7.5V"A"	VS-065	717			C5			
M3	67.5V"B"	VS-016		467			XX45		

MISCELLANEOUS

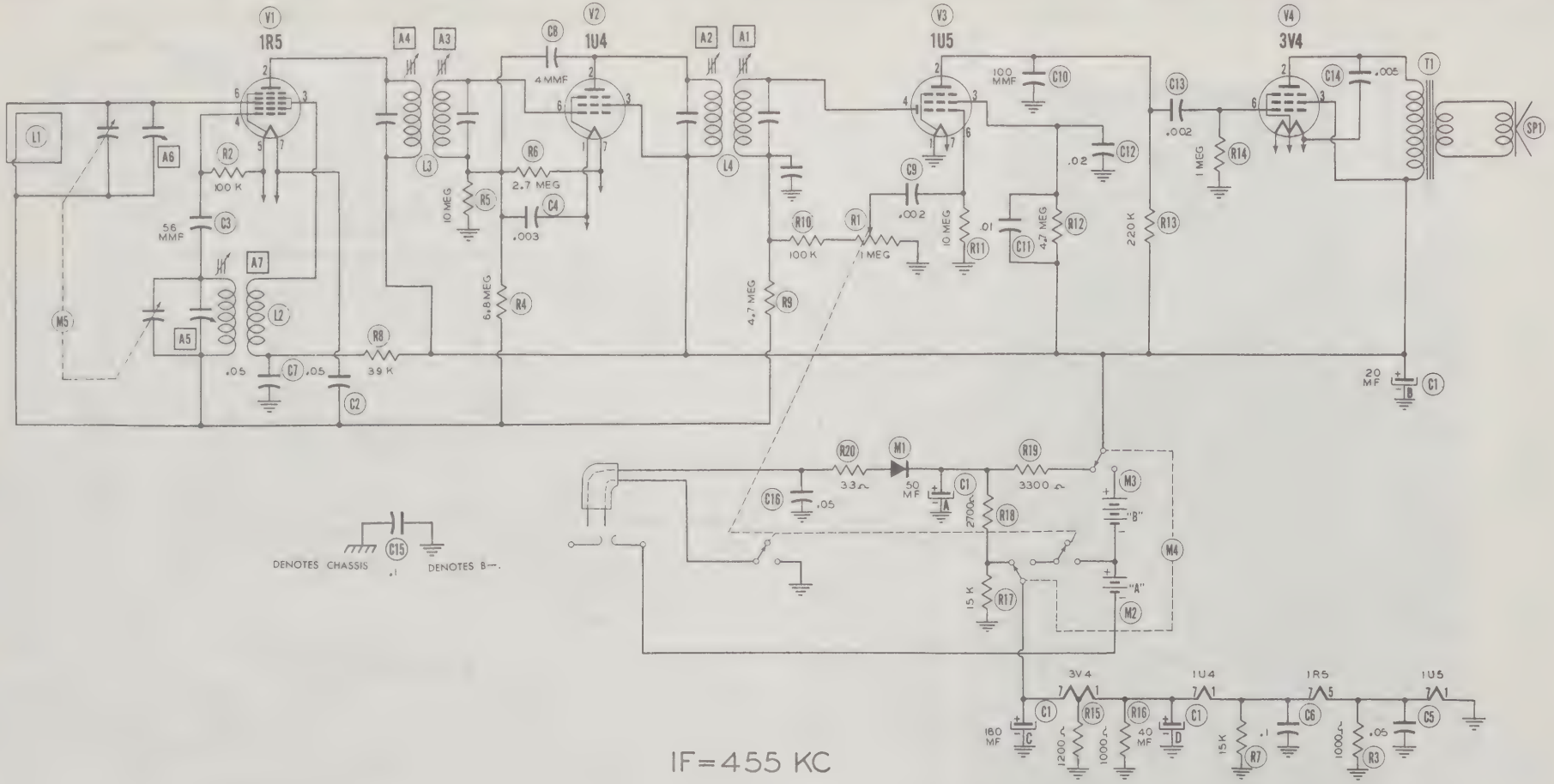
ITEM No.	PART NAME	RCA PART No.	NOTES
M4	Switch	71039	AC/DC-Battery
M5	2 Gang.Var.Cap.	74323	(11-365MMF, 7-114MMF)
	Indicator	74321	Dial
	Cabinet	Y2108	
	Dial Scale	74334	
	Knob	73490	Volume, tuning



CHASSIS—BOTTOM VIEW



RCA VICTOR MODEL 9BX56



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VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V-1	1R5	[illegible]	[illegible]	35VDC	5-6.3VDC	1.3VDC	0V	[illegible]
V-2	1U4	[illegible]	[illegible]	87VDC	0V	2.6VDC	1.3VDC	4VDC
V-3	1U5	[illegible]	[illegible]	1[illegible]VDC	-.3VDC	0V	-.1VDC	1.3VDC
V-4	3V4	4VDC	[illegible]	[illegible]VDC	[illegible]VDC	[illegible]VDC	0V	7VDC

§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V-1	1R5	∞	10.5K	141Ω	1.1K	∞	3.2Meg.	∞
V-2	1U4	∞	13.2K	13.2K	Inf.	∞	2 Meg.	∞
V-3	1U5	∞	14.2K	14.2K	1 Meg.	Inf.	10 Meg.	∞
V-4	3V4	∞	14K	13.2K	14.2K	∞	1 Meg.	∞

*DO NOT USE OHMMETER TO MEASURE FILAMENT RESISTANCE.
† Measured from output of M1.

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

PHOTOFACT STANDARD NOTATION SCHEMATIC

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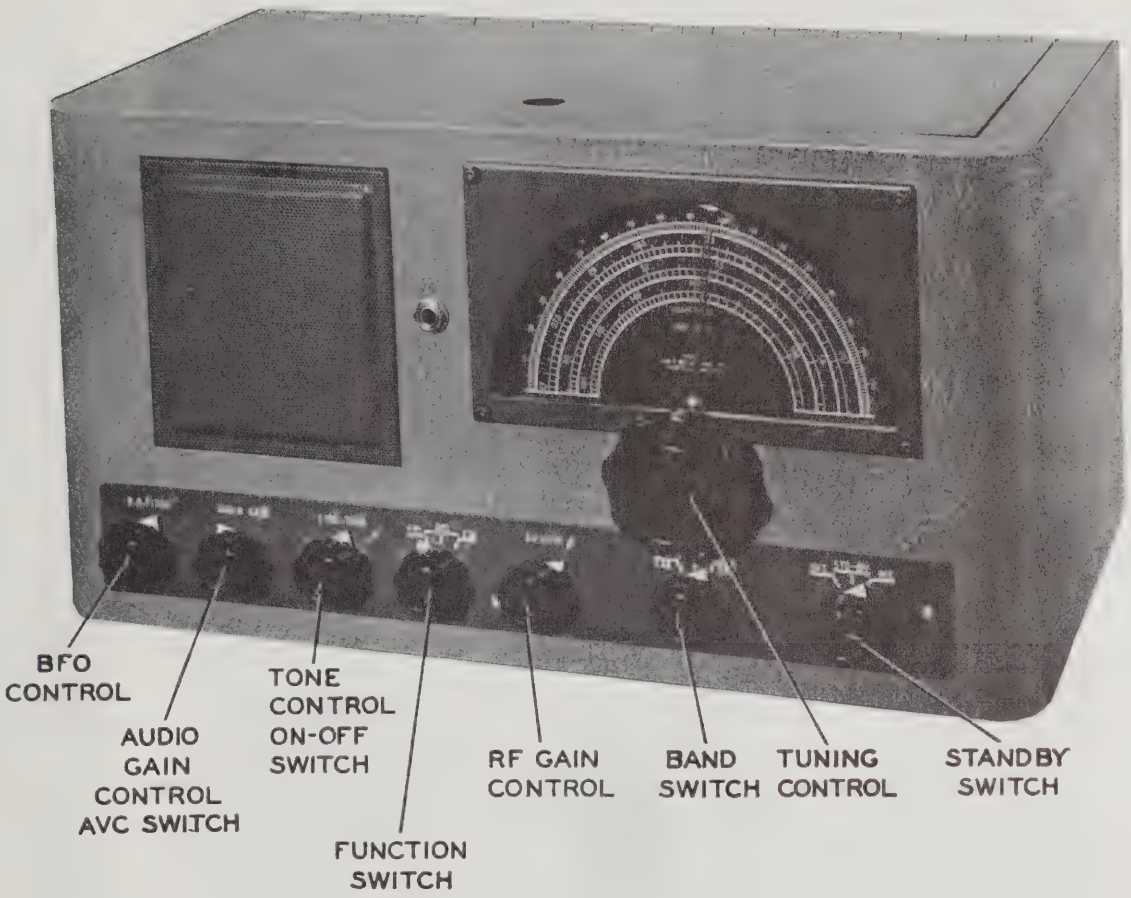
1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

RME
MODEL VHF 2-11



RME
MODEL VHF 2-11

RME MODEL VHF 2-11

TRADE NAME	RME, Model VHF 2-11
MANUFACTURER	Radio MFG. Engineers, Inc., 300-306 First Ave., Peoria, Illinois
TYPE SET	AC Operated Superheterodyne Communications Receiver
TUBES(THIRTEEN)	Types 6AK5 RF Amp., 12AT7 1st Converter, 6BE6 2nd Converter, 6BJ6 1st IF Amp., 6BJ6 2nd IF Amp., 6AL5 DET-AVC-Noise Limiter, 6BJ6 BFO, 6BJ6 Limiter, 6AL5 Ratio Det., 6AU6 or 6AJ6 AF Amp., 6G6G Power Output, VR150 Voltage Regulator, 5Y3GT Rectifier
POWER SUPPLY	110-120 Volts AC RATING .69 Amp. @ 117 Volts AC
TUNING RANGE	SW #1 27.0-29.7MC SW #2 50-54MC SW #3 144-148MC

HOWARD W. SAMS & CO., INC. • Indianapolis Indiana

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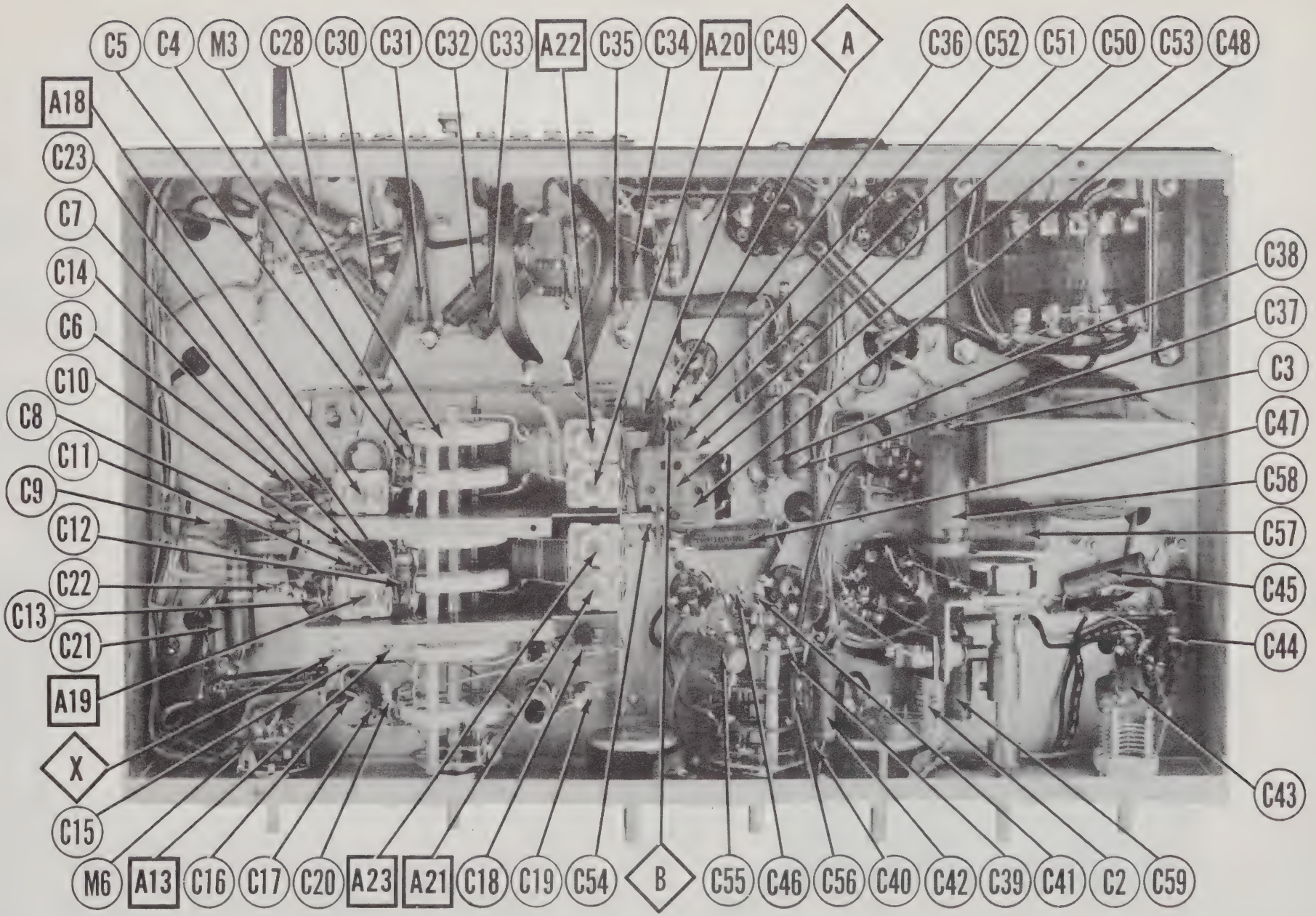
C5
C4
M3
C28
C30
C31
C32
C33
A22
C35
C34
A20
C49
A
C36
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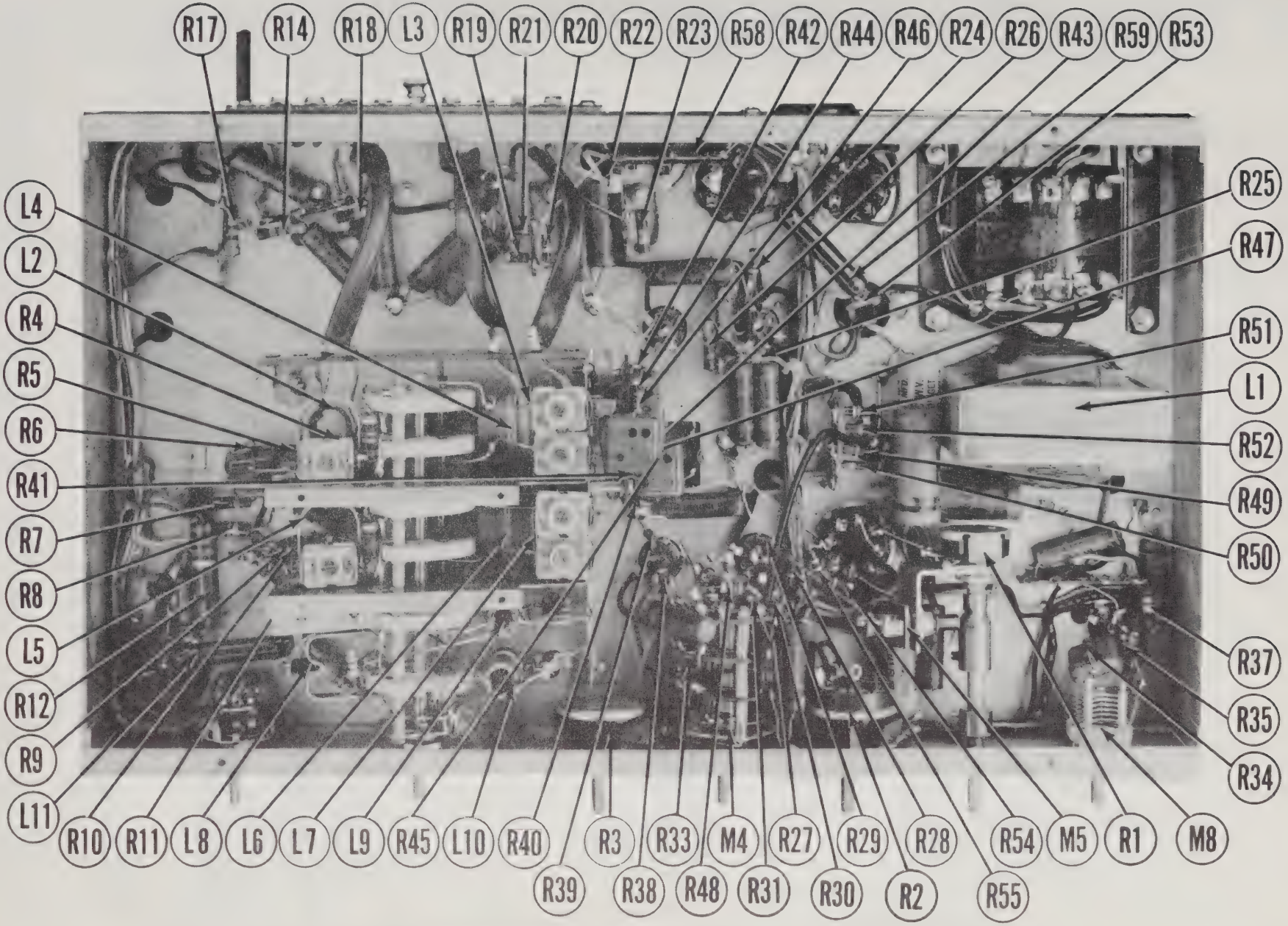
C51
C50
C53
C48
A18
C23
C7
C14
C6
C10
C8
C11
C9
C12
C22
C13
C21
A19
X
C15
C38
C37
C3
C47
C58
C57
C45
C44
C43
M6
A13
C16
C17
C20
A23
A21
C18
C19
C54
B
C55
C46
C56
C40
C42
C39
C41
C2
C59


R17
R14
R18
L3
R19
R21
R20
R22
R23
R58
R42
R44
R46
R24
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R59
R53
L4
L2
R4
R5
R6
R41
R7
R8
L5
R12
R9
L11
R25
R47
R51
L1
R52
R49
R50
R37
R35
R34
R10
R11
L8
L6
L7
L9
R45
L10
R40
R3
R33
M4
R27
R29
R28
R54
M5
R1
M8
R39
R38
R48
R31
R30
R2
R55

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: RME PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1	RF Amp.	6AK5	6AK5	7BD	
V2	1st Converter	12AT7	12AT7	9A	
V3	2nd Converter	6BE6	6BE6	7CH	
V4	1st IF Amp.	6BJ6	6BJ6	7CM	
V5	2nd IF Amp.	6BJ6	6BJ6	7CM	
V6	DET.-AVC-Noise Limiter	6AL5	6AL5	6BT	
V7	BFO	6BJ6	6BJ6	7CM	
V8	Limiter	6BJ6	6BJ6	7CM	
V9	Ratio Det.	6AL5	6AL5	6BT	
V10A	AF Amp.	6AU6	6AU6	7BK	
B	AF Amp.	6AJ6	6AJ6		
V11	Power Output	6G6G	6G6G	7S	
V12	Voltage Regulator	0D3/VR-150	0D3/VR-150	4AJ	
V13	Rectifier	5Y3GT	5Y3GT	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: RME PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	15	450		AF333J	UP15D145		EL-344	▲ Filter
B	15	450						■ Filter
C	10	450						AF Amp. Decoupling
C2	20	25		PRS25/25	BR202A		TA-25	Output Cath. Bypass
C3	20	25		PRS25/25	BR202A		TA-25	AF Amp. Cath. Bypass
C4	5			1468-000005	5W5V5	N.OK-5	MS-55	RF Coupling
C5	15					GP1K-15	MS-415	Fixed Padder
C6	1000	500		1468-001	1W5D1	GP2L-001	1FM-21	RF Cathode Bypass
C7	1000	500		1468-001	1W5D1	GP2L-001	1FM-21	RF Cathode Bypass
C8	1000	500		1468-001	1W5D1	GP2L-001	1FM-21	RF Screen Bypass
C9	.01	600		P688-01	GT6S1	GP2-335-01	TM-11	RF Bypass
C10	100	500		1468-0001	5W5T1	GP1K-100	1FM-31	RF Coupling
C11	25			1468-000025	5W5Q25	GP1K-25	MS-425	RF Coupling Note 1
C12	15					GP1K-15	MS-415	Fixed Padder
C13	1000	500		1468-001	1W5D1	GP2L-001	1FM-21	1st Conv. Cathode Bypass
C14	1.5					NPOK-1.5		Osc. Coupling
C15	25			1468-000025	5W5Q25	GP1K-25	MS-425	Osc. Grid Cap.
C16	25			1468-000025	5W5Q25	GP1K-25	MS-425	Osc. Feedback
C17	5			1469-000005	5R5V5	NPOK-5	MS-55	Fixed Trimmer
C18	15					GP1K-15	MS-415	Fixed Trimmer
C19	12					GP1K-12		Fixed Trimmer
C20	25			1469-000025	5R5Q25	NPOL-25	MS-425	Fixed Trimmer
C21	1000	500		1468-001	1W5D1	GP2L-001	1FM-21	Osc. Plate Decoupling
C22	25			1469-000025	5R5Q25	NPOL-25	MS-425	Fixed Trimmer Note 1
C23	1000	500		1468-001	1W5D1	GP2L-001	1FM-21	RF Filament Bypass Note 1
C24	.01	600		P688-01	GT6S1	GP2-335-01	TM-11	2nd Conv. Cath. Bypass
C25	25			1469-000025	5R5Q25	NPOL-25	MS-425	Fixed Trimmer
C26	.01	600		P688-01	GT6S1	GP2-335-01	TM-11	Osc. Anode Bypass
C27	.01	600		P688-01	GT6S1	GP2-335-01	TM-11	Osc. Anode Decoupling
C28	.01	600		P688-01	GT6S1	GP2-335-01	TM-11	2nd Conv. Fil. Bypass
C29	1000	500		1468-001	1W5D1	GP2L-001	1FM-21	2nd Conv. Fil. Bypass
C30	.01	600		P688-01	GT6S1	GP2-335-01	TM-11	2nd Conv. Plate Decoupling
C31	.01	600		P688-01	GT6S1	GP2-335-01	TM-11	AVC Filter
C32	.01	600		P688-01	GT6S1	GP2-335-01	TM-11	1st IF Cath. Bypass
C33	.01	600		P688-01	GT6S1	GP2-335-01	TM-11	1st IF Screen Bypass
C34	.01	600		P688-01	GT6S1	GP2-335-01	TM-11	1st IF Plate Decoupling
C35	.01	600		P688-01	GT6S1	GP2-335-01	TM-11	AVC Filter
C36	.01	600		P688-01	GT6S1	GP2-335-01	TM-11	2nd IF Cath. Bypass
C37	.01	600		P688-01	GT6S1	GP2-335-01	TM-11	2nd IF Screen Bypass
C38	.01	600		P688-01	GT6S1	GP2-335-01	TM-11	2nd IF Plate Decoupling
C39	250	500		1468-00025	5W5T25	GF2K-250	1FM-325	Diode RF Filter
C40	.01	600		P688-01	GT6S1	GP2-335-01	TM-11	AVC Filter
C41	5			1468-000005	5W5V5	NPOK-5	MS-55	BFO Coupling
C42	.01	600		P688-01	GT6S1	GP2-335-01	TM-11	AVC Filter
C43	1000	500		1468-001	1W5D1	GP2L-001	1FM-21	Osc. Grid Cap.
C44	.01	600		P688-01	GT6S1	GP2-335-01	TM-11	BFO Screen Bypass
C45	.01	600		P688-01	GT6S1	GP2-335-01	TM-11	DC Blocking

PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: RME PART No.	IRC PART No.	IDENTIFICATION CODES
R36	2200Ω	½		BTS-2200	BFO Screen See Note
R37	10KΩ	½		BTS-10K	BFO Plate
R38	220KΩ	½		BTS-220K	Limiter Grid
R39	220KΩ	½		BTS-220K	Limiter Screen
R40	100KΩ	½		BTS-100K	Limiter Plate Decoupling
R41	1000Ω	½		BTS-1000	Balancing
R42	10KΩ	½		BTS-10K	Balancing
R43	10KΩ	½		BTS-10K	Balancing
R44	68KΩ	½		BTS-68K	Disc. Diode Load
R45	68KΩ	½		BTS-68K	Disc. Diode Load
R46	47KΩ	½		BTS-47K	De-emphasis
R47	100KΩ	½		BTS-100K	Tone Compensation
R48	47KΩ	½		BTS-47K	Tone Compensation
R49	220KΩ	½		BTS-220K	AF Grid
R50	820Ω	½		BTS-820	AF Cathode
R51	100KΩ	½		BTS-100K	AF Plate
R52	220KΩ	½		BTS-220K	AF Screen
R53	22KΩ	½		BTS-22K	Filter
R54	470Ω	½		BTS-470	Output Cathode
R55	39Ω	½		BW-½-39	Output Cathode
R56	4300Ω	2		BT-2-4700	Tone Compensation
R57	1000Ω	½		BTS-1000	Tone Compensation
R58A	6800Ω	10		AB-7000	Bleeder Wire Wound
B	8200Ω	10		AB-8000	Bleeder Wire Wound
R59	3500Ω	10		AB-3500	Filter Wire Wound

Note: Not used in all models.

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: RME PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1	117VAC @ .69A	570VCT .098ADC	5VAC @ 2A	6.3VAC @ 2.7A		P-6013 ‡	P-2953 ‡	PH-90 ‡

‡ Add series resistor to reduce plate voltage.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: RME PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
T2	8KΩ	3.1Ω	600Ω	.5Ω		A-3879 ‡	A-2932 ‡	RO-301 ‡	‡ Bend mounting tabs down and mount on original bracket.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA: RME PART No.	JENSEN PART No.	QUAM PART No.	INSTALLATION NOTES
	FIELD	V. C. IMP.		ST-105 §		
SP1	PM	3.1Ω		MOD.P5-X	5A1 §	§ Remount output transformer.
	CONE DIA.	V. C. DIA.				
SP2	4 3/4"	9/16"				

FILTER CHOKE

ITEM No.	RATINGS: TOTAL DIRECT CURRENT	RATINGS: D.C. RESISTANCE	RATINGS: INDUCTANCE (0 CURRENT 1000 ~)	REPLACEMENT DATA: RME PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
L1	.098A	220Ω	10Henries		C-1001	C-2993	R-885	

PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA RME PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C46	25			1468-000025	SW5T25	GP1K-25	MS-425	IF Coupling
C47	.01	600		P688-01	GT6S1	GP2-335-01	TM-11	Limiter Screen Bypass
C48	1000			1468-001	1W5D1	GP2L-001	1FM-21	Limiter Plate Dec.
C49	50	500		1468-00005	SW5Q5	GP1K-50	1FM-45	Diode Load Cap. See Note 2
C50	50	500		1468-00005	SW5Q5	GP1K-50	1FM-45	Diode Load Cap. See Note 2
C51	500	500		1468-0005	SW5T5	GP2K-500	1FM-35	RF Bypass
C52	.1	100		P288-1	GT2P1		68P17	Stabilizing Cap.
C53	1000	500		1468-001	1W5D1	GP2L-001	1FM-21	De-emphasis
C54	.1	100		P288-1	GT2P1		68P17	Audio Coupling
C55	.01	600		P688-01	GT6S1	GP2-335-01	TM-11	Audio Coupling
C56	250	500		1468-00025	5W5T25	GP2K-250	1FM-325	AF Amp. Grid Bypass
C57	.1	600		P688-1	GT6P1		TM-1	AF Amp. Screen Bypass
C58	.1	600		P688-1	GT6P1		TM-1	Audio Coupling
C59	.01	600		P688-01	GT6S1	GP2-335-01	TM-11	Tone Comp.
C60	.01	600		P688-01	GT6S1	GP2-335-01	TM-11	Audio Coupling

Note 1. Not used in all models.
Note 2. When either items C49 or C50 are replaced, replace both with capacitors of equal value.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA RME PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
R1	500KΩ	½		Q11-153	M-58-Z	Volume control
R2A	1 Meg.	½		Q13-137	M-63-Z	Tone control
S	Switch			Te-2	SW-A2	Attach to R2A per instructions
R3	30KΩ	½		Q11-121	M-42-S	RF gain control

RESISTORS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA RME PART No.	IRC PART No.	IDENTIFICATION CODES
R4	15Ω	½			Parasitic Supp.
R5	100KΩ	½		BTS-100K	RF Grid
R6	220Ω	½		BW-½-220	RF Cathode
R7	15KΩ	½		BTS-15K	RF Screen
R8	18KΩ	1		BTA-18K	RF Plate
R9	100KΩ	½		BTS-100K	1st Conv. Grid
R10	2200Ω	½		BTS-2200	1st Conv. Cathode
R11	4700Ω	½		BTS-4700	1st Osc. Grid
R12	18KΩ	2		BT-2-18K	1st Osc. Plate
R13	1000Ω	½		BTS-1000	2nd Conv. Cathode
R14	2200Ω	½		BTS-2200	2nd Conv. Plate Decoupling
R15	22KΩ	½		BTS-22K	2nd Osc. Grid
R16	68KΩ	½		BTS-68K	2nd Osc. Anode
R17	2200Ω	½		BTS-2200	2nd Osc. Anode Decoupling
R18	10KΩ	½		BTS-10K	AVC Network
R19	470Ω	½		BTS-470	1st IF Cathode
R20	100KΩ	½		BTS-100K	Voltage Divider
R21	68KΩ	½		BTS-68K	1st IF Screen
R22	2200Ω	½		BTS-2200	1st IF Plate Decoupling
R23	10KΩ	½		BTS-10K	AVC Network
R24	470Ω	½		BTS-470	2nd IF Cathode
R25	68KΩ	½		BTS-68K	2nd IF Screen
R26	2200Ω	½		BTS-2200	2nd IF Plate Decoupling
R27	1 Meg.	½		BTS-1 Meg.	AVC Network
R28	220KΩ	½		BTS-220K	Diode Load
R29	220KΩ	½		BTS-220K	Diode Load
R30	1 Meg.	½		BTS-1 Meg.	AVC Network
R31	680KΩ	½		BTS-680K	AVC Network
R32	10KΩ	½		BTS-10K	AVC Network See Note
R33	470Ω	½		BTS-470	Voltage Divider
R34	47KΩ	½		BTS-47K	BFO Grid
R35	47KΩ	½		BTS-47K	BFO Cathode

DATE 12/49 SET #79 FOLDER 1

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

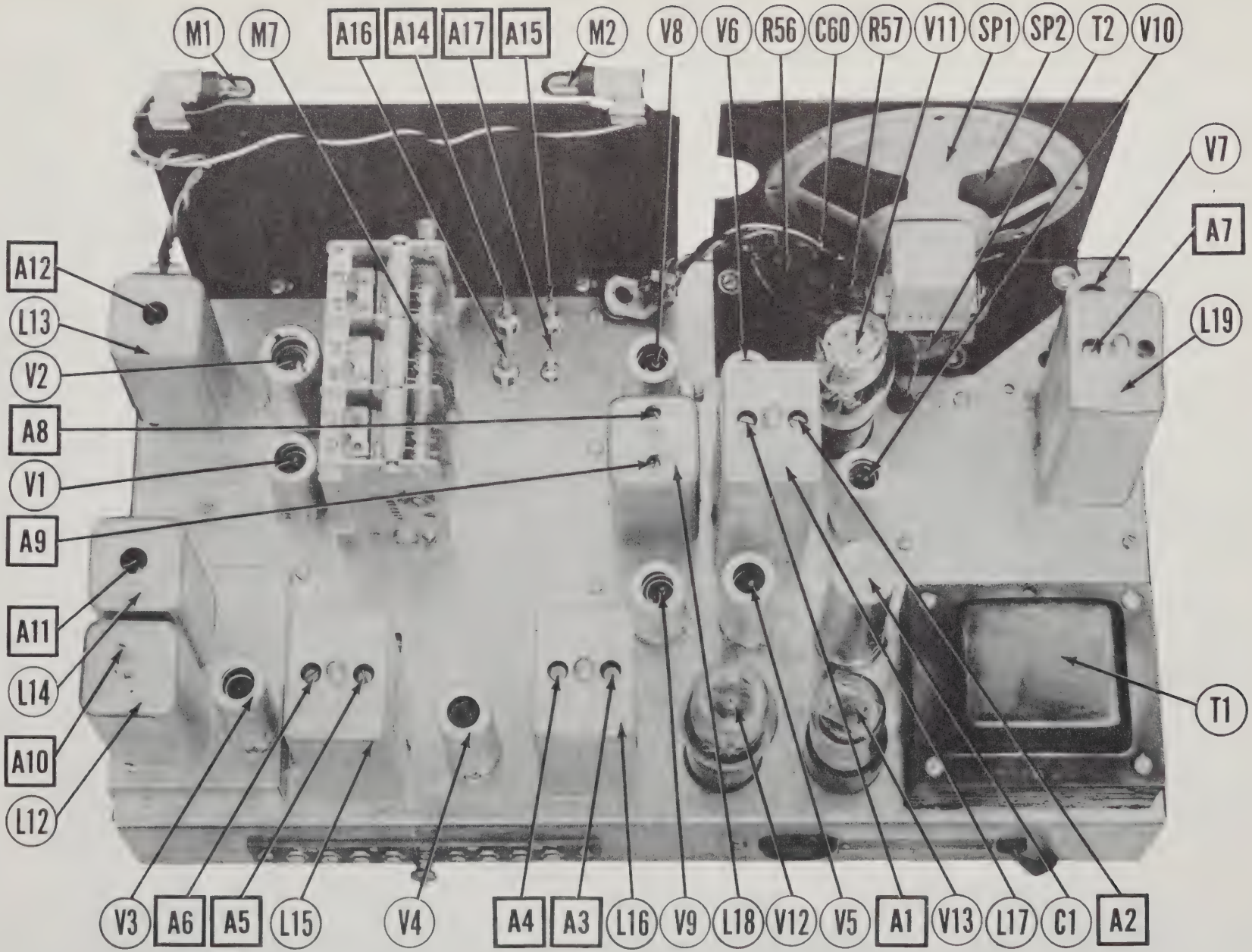
ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA RME PART No.	REPLACEMENT DATA MEISSNER PART No.	NOTES
L2	RF Coil	0Ω	0Ω			2 meters
L3	RF Coil	0Ω	0Ω			10 meters
L4	RF Coil	0Ω	0Ω			6 meters
L5	Mixer Grid	0Ω				2 meters
L6	Mixer Grid	0Ω				10 meters
L7	Mixer Grid	0Ω				6 meters
L8	Osc. Coil	0Ω				2 meters
L9	Osc. Coil	0Ω				10 meters
L10	Osc. Coil	0Ω				6 meters
L11	RF Choke	.1Ω				
L12	2nd Osc. Coil	0Ω				
L13	1st 6.95MC IF	.1Ω	0Ω			
L14	2nd 6.95MC IF	.1Ω	0Ω			
L15	1st 455KC IF	9Ω	3.5Ω			
L16	2nd 455KC IF	10.5Ω	3.5Ω			
L17	3rd 455KC IF	9Ω	9Ω			
L18	Ratio Det. Transformer	20Ω	20Ω			
L19	BFO Coil	3Ω				

DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA RME PART No.	REPLACEMENT DATA	NOTES
M1	Bayonet	6-8	.15	Brown			Type #47
M2	Bayonet	6-8	.15	Brown			Type #47

MISCELLANEOUS

ITEM No.	PART NAME	RME PART No.	NOTES
M3	Switch		Band
M4	Switch		Function
M5	Switch		ANL
M6	Switch		Standby-EXT.-INT.
M7	3 Gang Var. Cap.		Main Tuning
M8	Variable Cap.		BFO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A14
A17
A15
M2
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V6
R56
C60
R57
V11
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V10
V7
A7
L19
A12
L13
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A8
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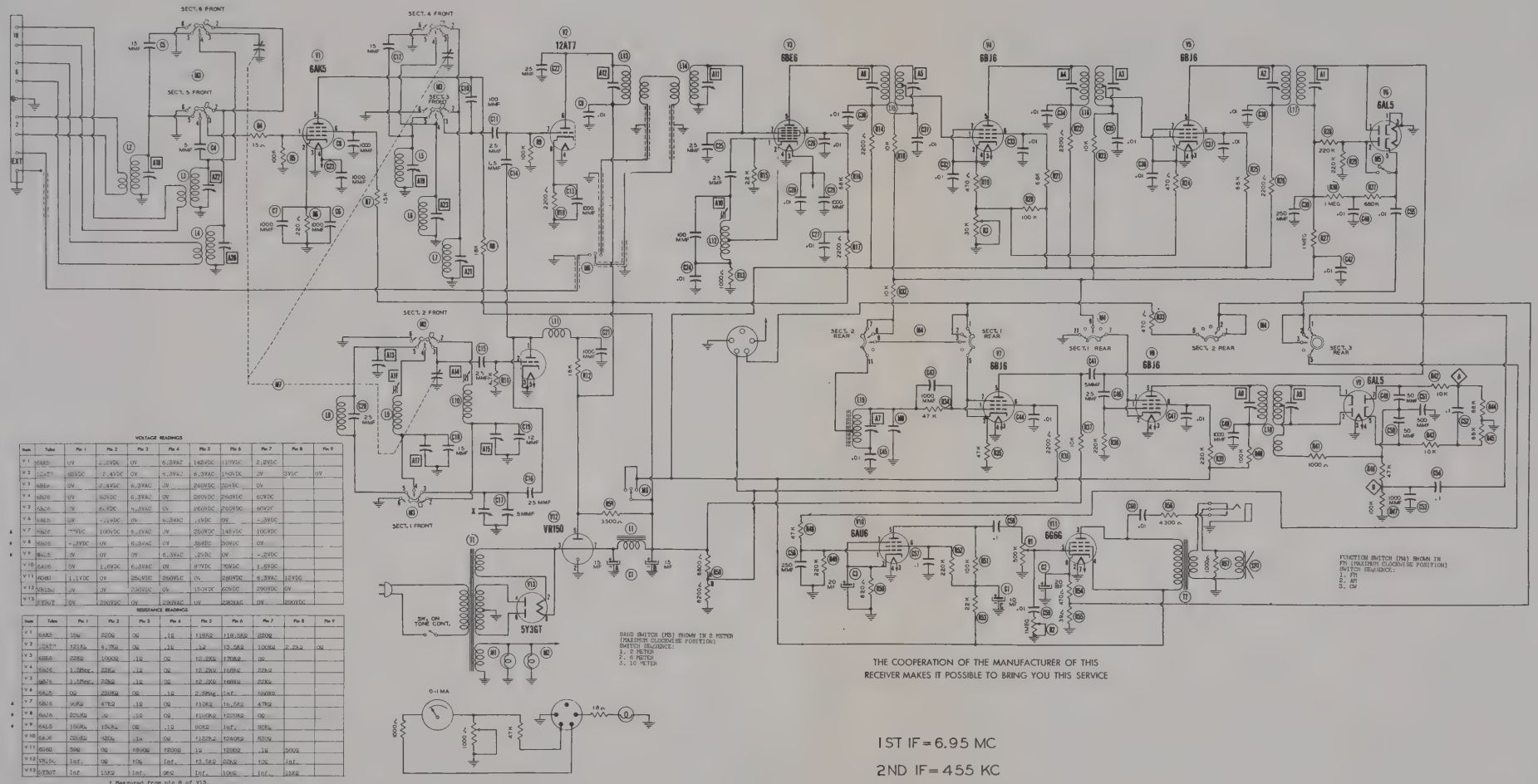

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6AK5	0V	2.2VDC	0V	6.3VAC	142VDC	117VDC	2.2VDC		
V 2	12AT7	65VDC	2.4VDC	0V	6.3VAC	6.3VAC	150VDC	0V	0VDC	0V
V 3	6BE6	0V	0.4VDC	6.3VAC	0V	260VDC	50VDC	0V		
V 4	6BJ6	0V	60VDC	6.3VAC	0V	260VDC	260VDC	60VDC		
V 5	6BJ6	0V	6.4VDC	6.3VAC	0V	260VDC	260VDC	60VDC		
V 6	6AL5	0V	-.22VDC	0V	6.3VAC	-.19DC	0V	-.3VDC		
6 V 7	6BJ6	-.7VDC	100VDC	6.3VAC	0V	250VDC	145VDC	100VDC		
6 V 8	6BJ6	-.2VDC	0V	6.3VAC	0V	258VDC	50VDC	0V		
6 V 9	6AL5	0V	0V	0V	6.3VAC	-.2VDC	0V	-.2VDC		
V 10	6AU6	0V	1.4VDC	6.3VAC	0V	87VDC	70VDC	1.6VDC		
V 11	6GG6	1.1VDC	0V	256VDC	260VDC	0V	260VDC	6.3VAC	1.6VDC	
V 12	VR150	0V	0V	290VDC	0V	150VDC	60VDC	290VDC	0V	
V 13	5Y3GT	0V	290VDC	0V	290VAC	0V	290VAC	0V	290VDC	

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6AK5	1MEG	220K	0Ω	.1Ω	110KΩ	110.5KΩ	220Ω		
V 2	12AT7	121KΩ	4.7KΩ	0Ω	.1K	.1Ω	13.5KΩ	100KΩ	2.2kΩ	0Ω
V 3	6BE6	22KΩ	100Ω	.1Ω	0Ω	12.2KΩ	170KΩ	0Ω		
V 4	6BJ6	1.2MEG	22KΩ	.1Ω	0Ω	12.2KΩ	168KΩ	22kΩ		
V 5	6BJ6	1.2MEG	22KΩ	.1Ω	0Ω	12.2KΩ	168KΩ	22kΩ		
V 6	6AL5	0Ω	220KΩ	0Ω	.1Ω	2.5KΩ	Inf.	56KΩ		
6 V 7	6BJ6	90KΩ	47KΩ	.1Ω	0Ω	110KΩ	116.5KΩ	47KΩ		
6 V 8	6BJ6	20KΩ	0Ω	.1Ω	0Ω	110KΩ	120KΩ	0Ω		
6 V 9	6AL5	150KΩ	15KΩ	0Ω	.1Ω	90KΩ	Inf.	80KΩ		
V 10	6AU6	250KΩ	420Ω	.1Ω	0Ω	110KΩ	124KΩ	820Ω		
V 11	6GG6	3MΩ	0Ω	180KΩ	120KΩ	1Ω	120KΩ	.1Ω	300Ω	
V 12	VR150	Inf.	0Ω	10K	Inf.	13.5KΩ	22kΩ	10K	Inf.	
V 13	5Y3GT	Inf	15KΩ	Inf.	9KΩ	Inf.	15KΩ	Inf.	15KΩ	

† Measured from pin 8 of V13.
♦ Measured with function switch in CW position.
♦ Measured with function switch in FM position.

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

1ST IF = 6.95 MC

2ND IF = 455 KC

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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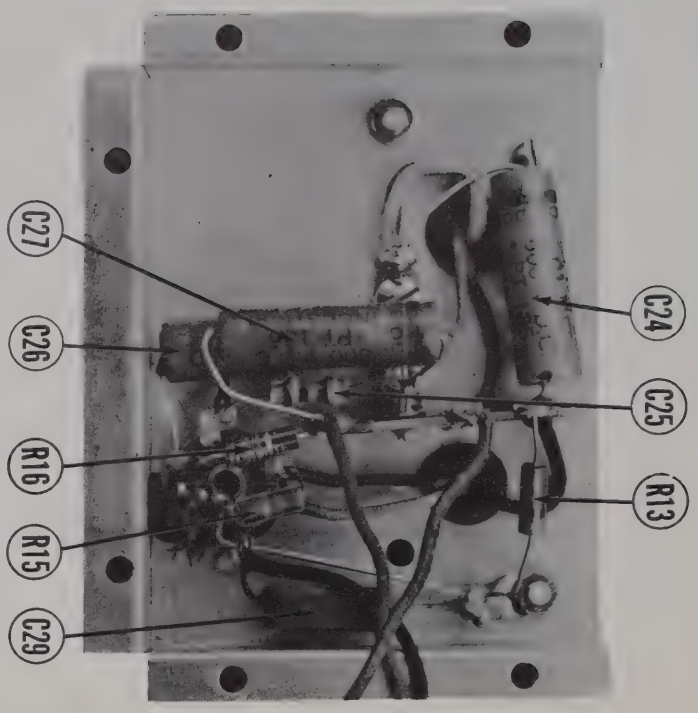
INPUT

The VHF 2-11 is provided with separate antenna connection for each frequency band. On the terminal strip on the rear apron are four sets of two terminals each. These terminals are marked "2" for the 144-148 mc band; "6" for the 50-54 mc band, and "10" for the 27-29.7 mc band. The input impedance for each band has been designed to be 300 ohms. The remaining two terminals marked "EXT" connect to the 6.95 mc portion of the receiver when the standby switch is turned to "EXT". These terminals are provided for the owner who also has an RME HF 10-20 Converter (or a VHF-152). The output cable of an RME 10-20 may be connected to the terminal and with the standby switch turned to "EXT" the 10-20 then may be used in the same manner as when connected to a receiver. All controls such as manual gain, BFO, noise limiter, etc. operated in the same manner as when using the internal RF portion of the VHF 2-11. An RME 10-20 may require some recalibration when used in this manner.



ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

For best results it is recommended that this receiver be aligned with the chassis in place in the cabinet. It will be necessary to remove the chassis for "Ratio-detector alignment."

If the "R" meter attachment is available, it may be used as an indicator in place of the output meter listed in the alignment table.

It should be noted that there are two converter tubes; make sure signal is fed into the proper tube.

455KC IF ALIGNMENT

If the "R" meter is used, turn the function switch to "AM" (center position). If an output meter is used, turn the function switch to "CW" (maximum clockwise) and remove the BFO tube (V7); this will disable the AVC circuit.

Turn the RF gain control to maximum clockwise.

Set the "EXT.-STD. BY-REC." switch to "REC" (maximum clockwise).

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	Direct	High side to ungrounded tube shield floating over converter tube (V3). Low side to chassis.	455KC (400~ Mod.)	Any	Tuning gang fully open	Across voice coil	A1,A2, A3,A4, A5,A6	Adjust for maximum output.

BFO ALIGNMENT

Set the BFO tuner capacitor at 1/2 maximum capacity. Be sure this position is retained when the knob is replaced with the pointer pointing straight up.

Do not move the signal generator from the setting used during 455KC IF alignment.

Replace the BFO tube (V7), if it was removed during IF alignment.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
2.	Direct	High side to ungrounded tube shield floating over converter tube (V3). Low side to chassis.	Use the same freq. as step 1 (Unmod.)	Any	Gang fully open	Across voice coil	A7	Adjust for zero beat in the speaker.

RATIO DETECTOR ALIGNMENT

If the receiver is being aligned with the chassis in the cabinet, it will be necessary to remove fthe chassis for this step only.

Turn the function switch to "FM" (maximum counter-clockwise).

A VTVM is required to align the ratio detector.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
3.	Direct	High side to ungrounded tube shield floating over converter tube (V3). Low side to chassis.	Use the same freq. as step 1. (Unmod.)	Any	Gang fully open	DC Probe to Point (A) Common to chassis.	A8	Adjust for maximum deflection.
4.	Direct	"	"	"	"	DC Probe to Point (B) Common to chassis.	A9	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

SECOND CONVERTER ALIGNMENT

Turn the "EXT.-STD. BY-REC" switch to "EXT".

Turn the function switch to "CW".

Make sure the BFO pitch control is set to EXACTLY the same position used during step 2.

If necessary, feed a 455KC unmodulated signal into the second converter and adjust the BFO pitch control for zero beat. Do not move the BFO pitch control during this step.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
5.	Direct	Across "Ext." terminals on rear of chassis.	6.95MC (Unmod.)	Any	Gang fully open	Across voice coil	A10	Adjust for zero beat in the speaker.

6.95MC IF ALIGNMENT

Turn the "EXT.-STD. BY-REC." switch to "REC". (maximum clockwise).

If the "R" meter is being used for an indicator, set the function switch to "AM". If an output meter is used set the function switch to "CW" and remove V7.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
6.	.01MFD	High side to stator of center section of tuning gang. Low side to chassis.	6.95MC (400~ Mod.)	Any	Gang fully open	Across voice coil	A11, A12	Adjust for maximum output.

OSCILLATOR ALIGNMENT

The oscillator adjustments in this receiver are very stable; oscillator alignment should not be attempted unless the set is definitely known to be off calibration.

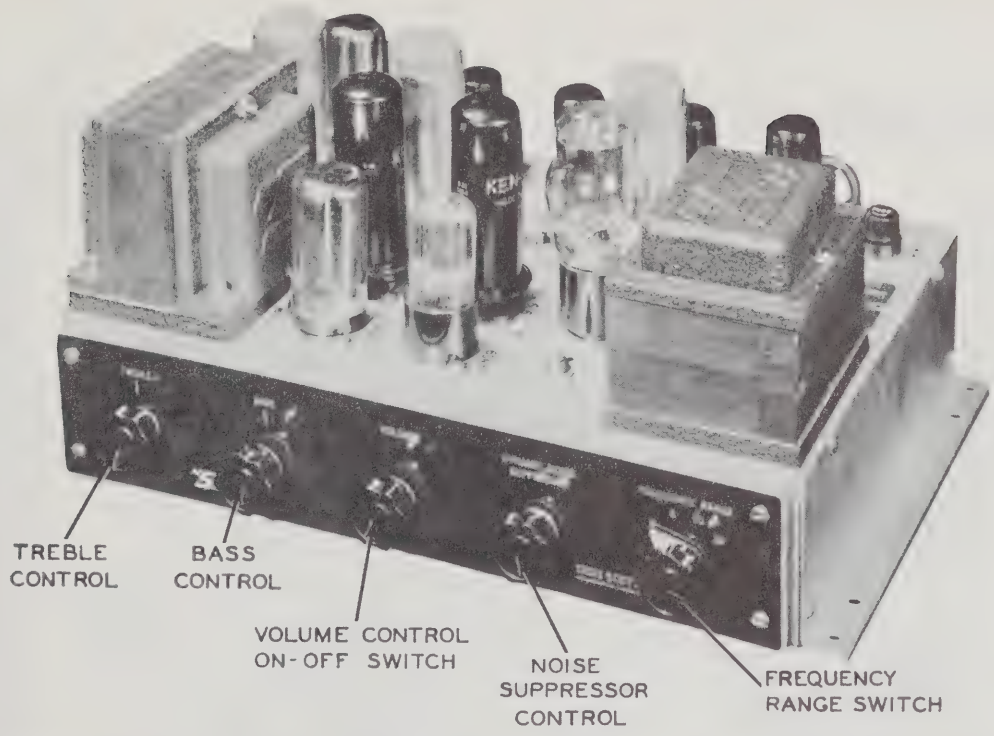
If the calibration seems to be off a comparable amount on all three bands, oscillator alignment may be accomplished in one step, using the trimmer "X". It should be noted that this is an overall oscillator adjustment and should not be adjusted for any individual band. If a small calibration error on the 27-29.7MC or 50-54MC band is to be corrected, the slug adjustment should be used.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
7.	300Ω carbon res.	Across "2" ant. terminals with 300Ω in series with high side of generator output.	144MC (400~ Mod.)	144-148 (maximum counter clockwise)	144MC	Across voice coil	A13	Adjust for maximum output.
8.	"	Across "6" ant. terminals with 300Ω in high side of signal generator output.	50MC (400~ Mod.)	50-54 (center)	50MC	"	A14	"
9.	"	"	54MC	"	54MC	"	A15	Adjust for maximum output. Repeat steps 8 and 9 until no further improvement can be made.
10.	"	Across "10" ant. terminals with 300Ω in series with high side of signal generator output.	27MC (400~ Mod.)	27-29.7 (clockwise)	27MC	"	A16	Adjust for maximum output.
11.	"	"	29MC	"	29MC	"	A17	Adjust for maximum output. Repeat steps 10 and 11 until no further improvement can be made.

RF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
12.	300Ω carbon res.	Across "2" ant. terminals with 300Ω in series with high side of signal gen. output.	146MC (400~ Mod.)	144-148 (counter clockwise)	146MC	Across voice coil	A18, A19	Adjust for maximum output.
13.	"	Across "6" ant. terminals with 300Ω in series with high side of signal gen. output.	52MC	50-54 (center)	52MC	"	A20, A21	"
14.	"	Across "10" ant. terminals with 300Ω in series with high side of signal gen. output.	28MC	27-29.7 (clockwise)	28MC	"	A22, A23	"

H. H. SCOTT
MODEL 210-A



H. H. SCOTT
MODEL 210-A

SCOTT MODEL 210-A

TRADE NAME	Scott, Model 210-A
MANUFACTURER	Hermon Hosmer Scott, Inc., 385 Putnam Ave., Cambridge 39, Mass.
TYPE SET	AC Operated Audio Amplifier with Dynamic Noise Suppressor
TUBES(TEN)	Types 12SL7GT Pre-Amp., 6SL7GT Treble-Bass Boost, 6SQ7 Control Amp., 6SG7 Treble Gate, 6SG7 Treble Gate, 12SG7 Bass Gate, 6SN7GT AF-Phase Inv., (2) 6L6 Power Output, 5V4G Rectifier
POWER SUPPLY	110-120 Volts AC — RATING: 1.3 Amp. @ 117 Volts AC

OUTPUT

The Amplifier's output transformer is tapped for matching a number of impedances between 4 and 500 ohms, and a standard RMA octal plug is provided for this purpose. Proper connections for various speaker impedances are as follows:

IMPEDANCE:	CONNECT SPEAKER TO:	CONNECT TOGETHER:
500 ohms	Pins 1 and 8	Pins 4-5
336 ohms	Pins 1 and 8	Pins 2-7
125 ohms	Pins 1 and 8	Pins 1-5, 8-4
84 ohms	Pins 1 and 8	Pins 1-7, 8-2
16 ohms	Pins 2 and 7	Pins 4-5
8 ohms	Pins 3 and 6	Pins 4-5
4 ohms	Pins 2 and 7	Pins 2-5, 4-7
2 ohms	Pins 3 and 6	Pins 3-5, 4-6

The pin numbers are molded on the plug.

When the rated speaker impedance does not correspond exactly to the values given in the table, use the connection giving the closest approximation, generally the next lower impedance. For instance, a 20 ohm speaker should be connected the same as a 16 ohm speaker.

SQUELCH

The Amplifier incorporates a squelch circuit which silences the Amplifier during the operation of a record changer and an automatic fade-in feature, preventing any undesirable effects as the squelch releases. To use the squelch feature, a simple contactor is added to the record changer which shorts to the changer frame during the entire change cycle. The contactor is connected to pin #3 of the 4-prong plug marked SQUELCH. The frame of the changer must be grounded by EITHER the shield on the pickup lead OR a wire to pin #1 on the SQUELCH plug; NOT BOTH. The squelch lead need not be shielded.

HOWARD W. SAMS & CO., INC. • Indianapolis Indiana

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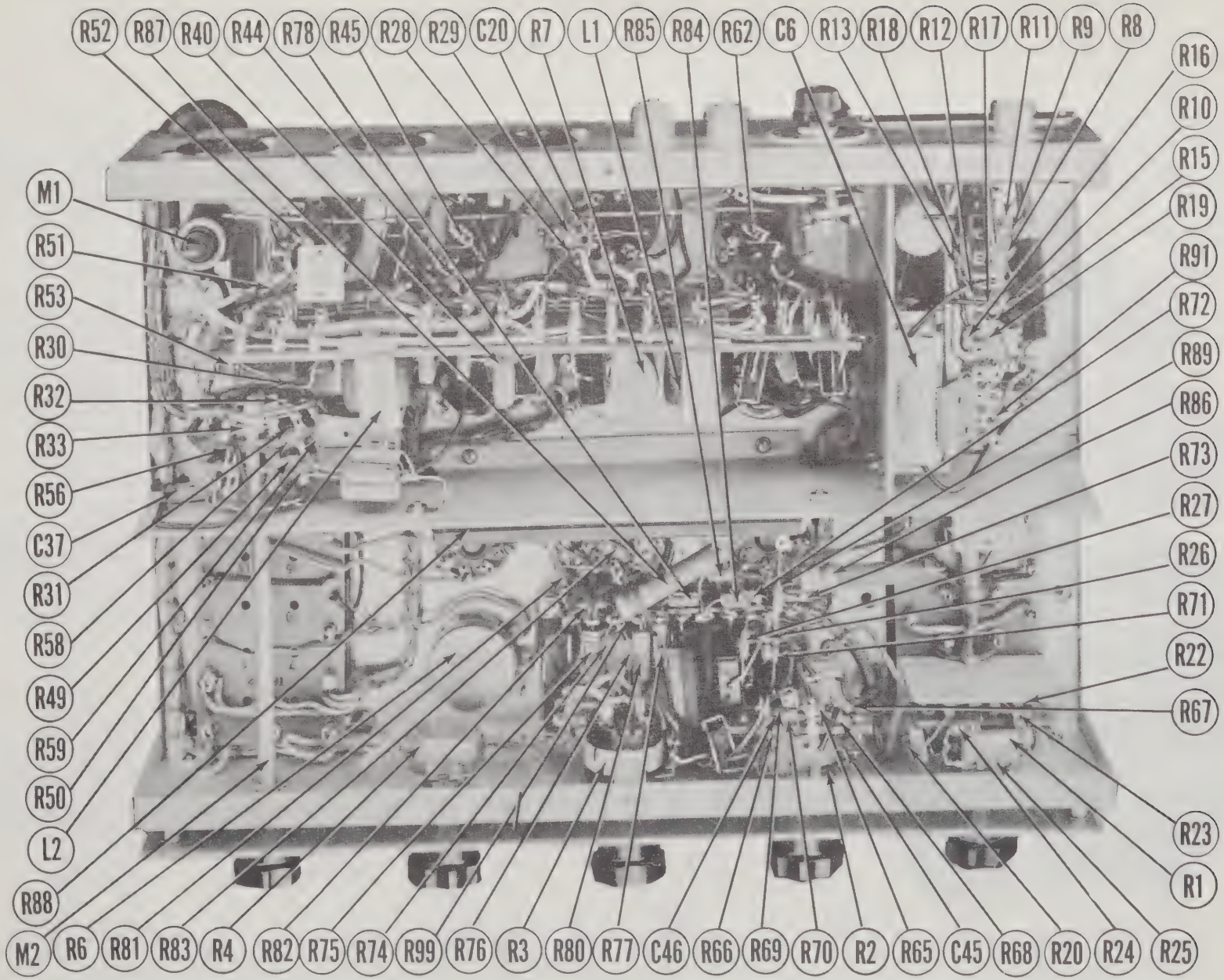
DATE 12/49 SET #79 FOLDER 15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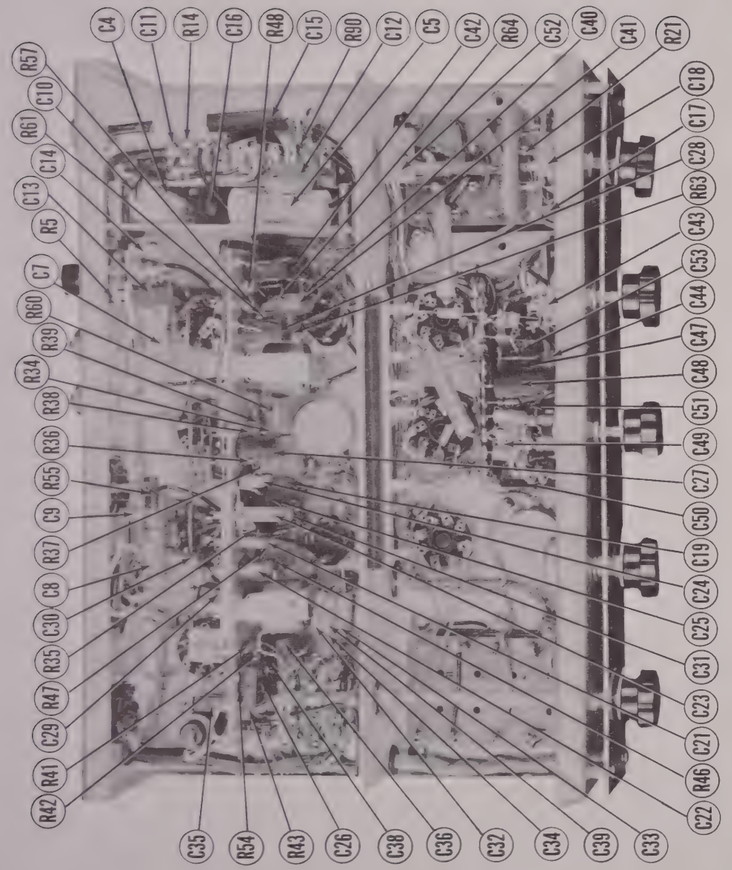

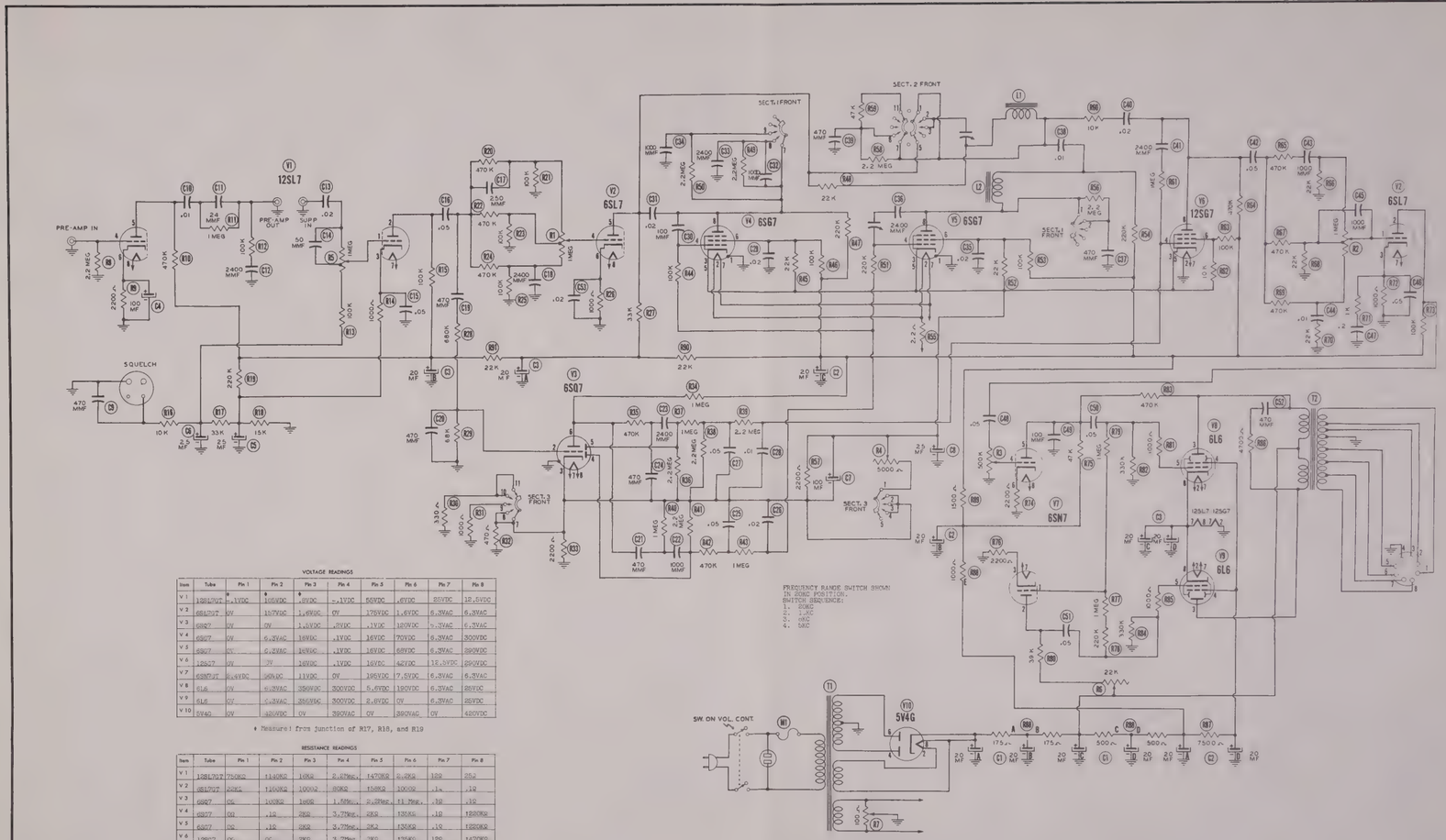

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	12SL7GT	-1.1VDC	105VDC	.6VDC	-.1VDC	56VDC	.6VDC	25VDC	12.5VDC
V 2	6SL7GT	0V	157VDC	1.6VDC	0V	175VDC	1.6VDC	6.3VAC	6.3VAC
V 3	6SQ7	0V	0V	1.5VDC	.2VDC	.1VDC	120VDC	6.3VAC	6.3VAC
V 4	6SG7	0V	6.2VAC	16VDC	.1VDC	16VDC	70VDC	6.3VAC	300VDC
V 5	6SG7	0V	6.2VAC	14VDC	.1VDC	16VDC	68VDC	6.3VAC	290VDC
V 6	12SG7	0V	0V	16VDC	.1VDC	16VDC	42VDC	12.5VDC	250VDC
V 7	6SN7GT	-8.4VDC	90VDC	11VDC	0V	195VDC	7.5VDC	6.3VAC	6.3VAC
V 8	6L6	0V	6.2VAC	350VDC	300VDC	6.6VDC	190VDC	6.3VAC	285VDC
V 9	6L6	0V	6.2VAC	345VAC	300VDC	2.6VDC	0V	6.3VAC	285VDC
V 10	5V4G	0V	420VDC	0V	350VAC	0V	350VAC	0V	480VDC

♦ Measured from junction of R17, R18, and R19

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	12SL7GT	750KΩ	1140KΩ	1MΩ	2.2Meg.	1470KΩ	2.2MΩ	1ΩΩ	25Ω
V 2	6SL7GT	220Ω	1150KΩ	100Ω	80KΩ	1585KΩ	100Ω	1Ω	1Ω
V 3	6SQ7	OΩ	105KΩ	1MΩ	1.5Meg.	2.2Meg.	11 Meg.	1Ω	1Ω
V 4	6SG7	OΩ	1Ω	2KΩ	3.7Meg.	2KΩ	130KΩ	1Ω	†220KΩ
V 5	6SG7	OΩ	1Ω	2KΩ	3.7Meg.	2KΩ	130KΩ	1Ω	†220KΩ
V 6	12SG7	OΩ	OΩ	2KΩ	3.7Meg.	2KΩ	135KΩ	12Ω	1470KΩ
V 7	6SN7GT	60KΩ	160KΩ	2.2KΩ	80Ω	1470KΩ	2.2KΩ	1Ω	1Ω
V 8	6L6	OΩ	1Ω	140ΩΩ	19KΩ	330KΩ	147KΩ	1Ω	25Ω
V 9	6L6	OΩ	1Ω	140ΩΩ	19KΩ	330KΩ	Inf.	1Ω	25Ω
V 10	5V4G	Inf.	25KΩ	Inf.	67Ω	Inf.	65Ω	Inf.	25KΩ

† Measured from pin 8 of V10

THE COOPERATION OF THE MANUFACTURER OF THIS EQUIPMENT MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6. Volume control at minimum, proper output load connected.

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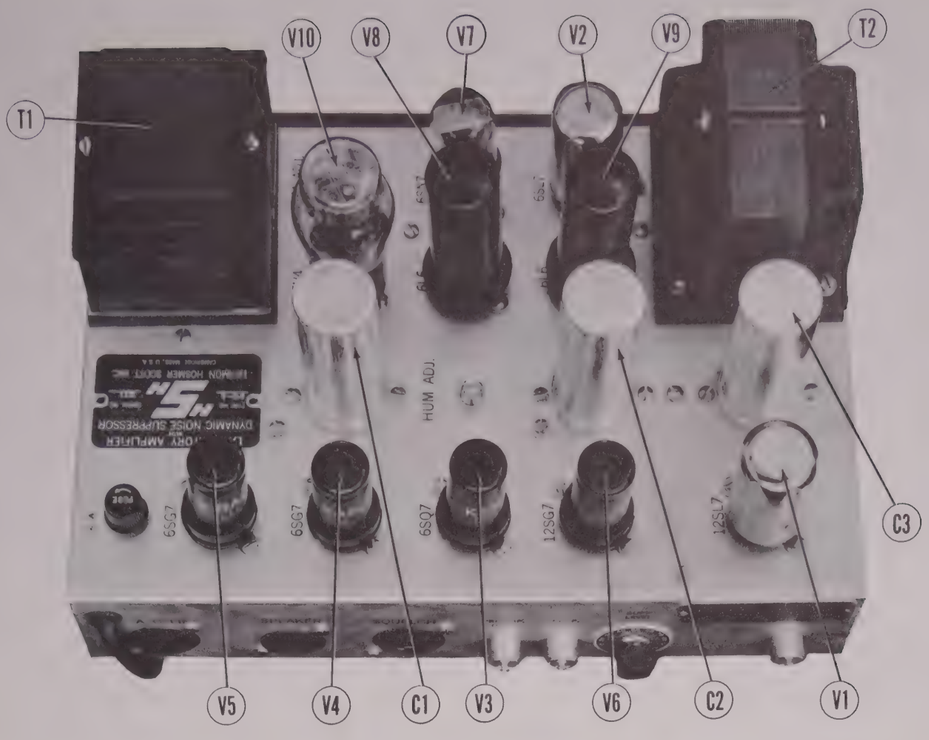

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: SCOTT PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1	Pre.-Amp.		12SL7GT	8BD	
V2	Treble Boost-Bass Boost		6SL7GT	8BD	
V3	Control Amp.		6SN7	8Q	
V4	Treble Gate		6SG7	6BK	
V5	Treble Gate		6SG7	6BK	
V6	Bass Gate		12SG7	6BK	
V7	AF Amp.-Phase Inv.		6SN7GT	8BD	
V8	Power Output		6L6	7AC	
V9	Power Output		6L6	7AC	
V10	Rectifier		5V4G	5L	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: SCOTT PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	20	475		AF4444X	UP22501		D14744	▲ Filter
B	20	475						■ Filter
C	20	475						▲ Filter
D	20	475						Filter
C2A	20	475		AF4444X	UP22501		D14744	▲ Filter
B	20	475						■ Filter
C	20	475						▲ Filter
D	20	475						Output Screen Bypass
C3A	20	475		AF4444X	UP22501		D14744	▲ Filter
B	20	475						■ Filter
C	20	475						▲ Output Plate Bypass
D	20	475						Output Plate Bypass
C4	100	15		PR825/100	BRH-151		UHC-115	Pre-Amp. Cath. Bypass
C5	25	25		PR825/25	BR252A		TVA-6	Squelch Filter
C6	25	25		PR825/25	BR252A		TVA-6	Squelch Filter
C7	100	15		PR825/100	BRH-151		UHC-115	Cathode Bypass
C8	25	25		PR825/25	BR252A		TVA-6	Cathode Bypass
C9	470	500		1468-0005	5W5T5	GP2K-470	1FM-35	Squelch Filter
C10	.01	600		639T-01	TVC691		PX-116	Audio Coupling
C11	24	500		1468-000025	5W5425	GP1K-25	M8-425	Tone Comp.
C12	2400	500		1467-0025	1W5D25	GP2M-0025		Tone Comp.
C13	.02	400		489-02	TVC482		PX-126	Audio Coupling
C14	50	500		1468-000025	5W525	GP1K-50	1FM-45	Tone Comp.
C15	.05	600		689-05	TVC685		PX-156	Pre-Amp. Cath. Bypass
C16	.05	600		689-05	TVC685		PX-156	Audio Coupling
C17	250	500		1468-00025	5W525	GP2K-250	1FM-325	Tone Comp.
C18	2400	500		1467-0025	1W5D25	GP2M-0025		Tone Comp.
C19	470	500		1468-0005	5W5T5	GP2K-470	1FM-35	Audio Coupling
C20	470	500		1468-0005	5W5T5	GP2K-470	1FM-35	Tone Comp.
C21	470	500		1468-0005	5W5T5	GP2K-470	1FM-35	Treble Diode Coupling
C22	1000	500		1468-001	1W5D1	GP2L-001	1FM-21	Treble Diode Coupling
C23	2400	500		1467-0025	1W5D25	GP2M-0025		Bass Diode Coupling
C24	470	500		1468-0005	5W5T5	GP2K-470	1FM-35	AF Feedback
C25	.05	600		689-05	TVC685		PX-156	Treble Diode Filter
C26	.02	400		489-02	TVC482		PX-126	Treble Diode Filter
C27	.05	600		689-05	TVC685		PX-156	Bass Diode Filter
C28	.01	600		639T-01	TVC681		PX-116	Bass Diode Filter
C29	.02	400		489-02	TVC482		PX-126	Treble Gate Screen Bypass
C30	100	500		1468-0001	5W571	GP1K-100	1FM-31	Phase Shift Cap.
C31	.02	400		489-02	TVC482		PX-126	Audio Coupling
C32	1000	500		1468-001	1W5D1	GP2L-001	1FM-21	Tone Comp.
C33	2400	500		1467-0025	1W5D25	GP2M-0025		Tone Comp.
C34	1000	500		1468-001	1W5D1	GP2L-001	1FM-21	Tone Comp.
C35	.02	400		489-02	TVC482		PX-126	Treble Gate Screen Bypass
C36	2400	500		1467-0025	1W5D25	GP2M-0025		Phase Shift Cap.
C37	470	500		1468-0005	5W5T5	GP2K-470	1FM-35	Tone Comp.
C38	.01	600		639T-01	TVC681		PX-116	Audio Coupling
C39	470	500		1468-0005	5W5T5	GP2K-470	1FM-35	Tone Comp.

PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: SCOTT PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES
R36	2.2 Meg.	½		BTS-2.2 Meg.	Bass Diode Load
R37	1 Meg.	½		BTS-1 Meg.	Bass Diode Load
R38	2.2 Meg.	½		BTS-2.2 Meg.	Bass Diode Load
R39	2.2 Meg.	½		BTS-2.2 Meg.	Bass Diode Filter
R40	1 Meg.	½		BTS-1 Meg.	Tone Comp.
R41	2.2 Meg.	½		BTS-2.2 Meg.	Treble Diode Load
R42	470KΩ	½		BTS-470K	Treble Diode Load
R43	1 Meg.	½		BTS-1 Meg.	Treble Diode Filter
R44	100KΩ	½		BTS-100K	Treble Gate Grid
R45	22KΩ	½		BTS-22K	Voltage Divider
R46	100KΩ	1		BTA-100K	Treble Gate Screen
R47	220KΩ	½		BTS-220K	Treble Gate Plate
R48	22KΩ	½		BTS-22K	Tone Comp.
R49	2.2 Meg.	½		BTS-2.2 Meg.	Tone Comp.
R50	2.2 Meg.	½		BTS-2.2 Meg.	Tone Comp.
R51	220KΩ	½		BTS-220K	Treble Gate Grid
R52	22KΩ	½		BTS-22K	Voltage Divider
R53	100KΩ	1		BTA-100K	Treble Gate Screen
R54	220KΩ	½		BTS-220K	Treble Gate Plate
R55	2.2Ω	1		SW-1-2.2	Filament Dropping (Wire Wound)
R56	2.2 Meg.	½		BTS-2.2 Meg.	Tone Comp.
R57	22ΩΩ	½		BTS-2200	Treble and Bass Gate Cathode
R58	2.2 Meg.	½		BTS-2.2 Meg.	Tone Comp.
R59	47KΩ	½		BTS-47K	Tone Comp.
R60	10KΩ	½		BTS-10K	Tone Comp.
R61	1 Meg.	½		BTS-1 Meg.	Tone Comp.
R62	10KΩ	½		BTS-10K	Voltage Divider
R63	100KΩ	1		BTA-100K	Bass Gate Screen
R64	470KΩ	½		BTS-470K	Bass Gate Plate
R65	470KΩ	½		BTS-470K	Tone Comp.
R66	22KΩ	½		BTS-22K	Tone Comp.
R67	470KΩ	½		BTS-470K	Tone Comp.
R68	22KΩ	½		BTS-22K	Tone Comp.
R69	470KΩ	½		BTS-470K	Tone Comp.
R70	22KΩ	½		BTS-22K	Tone Comp.
R71	1000Ω	½		BTS-1000	Tone Comp.
R72	1000Ω	½		BTS-1000	Bass Boost Cathode
R73	100KΩ	½		BTS-100K	Bass Boost Plate
R74	2200Ω	½		BTS-2200	AF Cathode
R75	47KΩ	1		BTA-47K	AF Plate
R76	2200Ω	½		BTS-2200	Phase Inv. Cathode
R77	1 Meg.	½		BTS-1 Meg.	Feedback
R78	220KΩ	½		BTS-220K	Feedback
R79	1 Meg.	½		BTS-1 Meg.	Phase Inv. Grid
R80	39KΩ	1		BTA-39K	Phase Inv. Plate
R81	1000Ω	½		BTS-1000	Output Grid
R82	330KΩ	½		BTS-330K	Output Grid
R83	470KΩ	½		BTS-470K	Feedback
R84	330KΩ	½		BTS-330K	Output Grid
R85	1000Ω	½		BTS-1000	Output Grid
R86	4700Ω	2		BT-2-4700	Tone Comp.
R87	75ΩΩ	2			Output Screen
R88A	17Ω	5			Filter Wire Wound
B	17Ω	5			Filter Wire Wound
C	50Ω	5		AB-500	Filter Wire Wound
D	50Ω	5		AB-500	Filter Wire Wound
E	1000Ω	5		AB-1000	Filter Wire Wound
R89	1500Ω	½		BTS-1500	Filter
R90	22KΩ	½		BTS-22K	Filter
R91	22KΩ	½		BTS-22K	Filter

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: SCOTT PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: MERIT PART No.	REPLACEMENT DATA: CHICAGO PART No.
T1	117VAC ⑤ 1.3A	750VCT .170ADC	5VAC ⑤ 2A	6.3VAC ⑤ 3.9A				

PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: SCOTT PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C40	.02	400		489-02	TVC482		PX-126	Audio Coupling
C41	2400	500		1467-0025	1W5D25	GP2M-0025		Phase Shift Cap.
C42	.05	600		689-05	TVC685		PX-156	Audio Coupling
C43	1000	500		1468-001	1W5D1	GP2L-001	1FM-21	Tone Comp.
C44	.01	600		639T-01	TVC681		PX-116	Tone Comp.
C45	1000	500		1468-001	1W5D1	GP2L-001	1FM-21	Tone Comp.
C46	.05	600		689-05	TVC685		PX-156	Bass Boost Bypass
C47	.2	120		P488-22	TVC4P25		PX-26	Tone Comp.
C48	.05	600		689-05	TVC685		PX-156	Audio Coupling
C49	100	500		1468-0001	5W571	GP1K-100	1FM-31	AF Amp. Plate Bypass
C50	.05	600		689-05	TVC685		PX-156	Audio Coupling
C51	.05	600		689-05	TVC685		PX-156	Audio Coupling
C52	470	500		1468-0005	5W5T5	GP2K-470	1FM-35	Tone Comp.
C53	.02	400		489-02	TVC482		PX-126	Treble Boost Cath. Bypass Note

Note. Not used in all models.
† Use two C-D #UP2250 capacitors.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: SCOTT PART No.	REPLACEMENT DATA: IRC PART No.	REPLACEMENT DATA: CLAROSTAT PART No.	INSTALLATION NOTES
R1	1 Meg.	½		Q19-137X	T-112	Treble Control, tapped ⑤ 500KΩ
R2	1 Meg.	½		Q19-137X	T-112	Bass Control, tapped ⑤ 500KΩ
R3A	500KΩ	2		215-193	M-60-2	Volume Control
B	Switch			76-2	SW-A2	Attach to R3A per instructions
R4	3000Ω	½				Noise Suppressor Control,
R5	1 Meg.	½		Q19-137X	T-112	Supp. Level Control, tapped ⑤ 500KΩ
R6	22KΩ	2				Hum Control, Wire Wound
R7	100Ω	1		43-100	W-100	Hum Control, Wire Wound

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: SCOTT PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES
R8	2.2 Meg.	½		BTS-2.2 Meg.	Pre Amp. Grid
R9	2200Ω	½		BTS-2200	Pre Amp. Cathode
R10	470KΩ	½		BTS-470K	Pre Amp. Plate
R11	1 Meg.	½		BTS-1 Meg.	Tone Comp.
R12	100KΩ	½		BTS-100K	Tone Comp.
R13	100KΩ	½		BTS-100K	Pre Amp. Grid
R14	1000Ω	½		BTS-1000	Pre Amp. Cathode
R15	100KΩ	½		BTS-100K	Pre Amp. Plate
R16	10KΩ	½		BTS-10K	Squelch Filter
R17	33KΩ	½		BTS-33K	Squelch Filter
R18	15KΩ	½		BTS-15K	Voltage Divider
R19	220KΩ	½		BTS-220K	Voltage Divider
R20	470KΩ	½		BTS-470K	Tone Comp.
R21	100KΩ	½		BTS-100K	Tone Comp.
R22	470KΩ	½		BTS-470K	Tone Comp.
R23	100KΩ	½		BTS-100K	Tone Comp.
R24	470KΩ	½		BTS-470K	Tone Comp.
R25	100KΩ	½		BTS-100K	Tone Comp.
R26	100KΩ	½		BTC-1000	Treble Boost Cathode
R27	33KΩ	½		BTS-33K	Treble Boost Plate
R28	680KΩ	½		BTS-680K	Tone Comp.
R29	68KΩ	½		BTS-68K	Control Amp. Grid
R30	330Ω	½		BW-½-330	Control Amp. Cathode
R31	1000Ω	½		BTS-1000	Control Amp. Cathode
R32	470Ω	½		BTS-470	Control Amp. Cathode
R33	2200Ω	½		BTS-2200	Control Amp. Cathode
R34	1 Meg.	½		BTS-1 Meg.	Control Amp. Plate
R35	470KΩ	½		BTS-470K	Tone Comp.

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: SCOTT PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: MERIT PART No.	REPLACEMENT DATA: CHICAGO PART No.	INSTALLATION NOTES
T2	7KΩ	500Ω	150Ω	142					
	CT	366Ω	CT	142					
		125Ω		3.72					
		84Ω		3.72					
		16Ω		.62					
		8Ω		.42					
		4Ω		.22					
		2Ω		.32					

FILTER CHOKE

ITEM No.	RATINGS: TOTAL DIRECT CURRENT	RATINGS: D.C. RESISTANCE	RATINGS: INDUCTANCE (@ CURRENT 1000 mA)	REPLACEMENT DATA: SCOTT PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: MERIT PART No.	REPLACEMENT DATA: CHICAGO PART No.	INSTALLATION NOTES
L1		550Ω	1 Henry					
L2		140Ω	.3Henries					

MISCELLANEOUS

ITEM No.	PART NAME	SCOTT PART No.	NOTES
M1	Fuse		3 Amp.
M2	Switch		Frequency Range

SUPPRESSOR LEVEL CONTROL

The screwdriver adjustment marked SUPP. LEVEL (on the back of the Amplifier) is set at the factory at approximately correct sensitivity for operation with the particular General Electric variable reluctance pickup supplied, and the setting of this control should not be altered except as hereafter noted. The output from any tuner or pickup connected to the SUPP. IN jack should be adjusted to provide approximately the same operating level in the Amplifier as when the General Electric pickup is used on average records. The proper operation of the Dynamic Noise Suppressor depends on this input level adjustment. It should be set once, and henceforth the output volume should be controlled only by the VOLUME control on the Amplifier.

SETTING THE LEVEL ADJUSTMENT

Connect a 20,000 ohm-per-volt meter (with a 250 or 300 volt range) from the plate (pin #8) of the 6SQ7 (V5) in the rear corner of the chassis to ground.

This can be most easily done using an adapter under the tube, rather than removing the bottom of the instrument. With the range switch on "10", set the suppression control so the meter reads 125 v. (suppression control somewhere near half on.) Play the 1000 cycle band of the Columbia 10004 M test record with the pickup in question. Adjust the suppression level control on the rear of the chassis so that the meter reads the following voltages for the three positions of the range switch:

POSITION	METER READING
10KΩ	245-250
5KΩ	220-225
5KΩ	185-195

This level control should be set so that the meter readings agree "on the average" with the above values for all positions of the range switch. (In the 20KΩ position, the meter should read well over 250 V. with or without any input signal.)

HUM

On the Amplifier chassis are two screwdriver hum adjustments. These are set at the factory for minimum hum with the original tubes in the Amplifier. When new tubes are installed, or if hum becomes objectionable for any reason, these should be readjusted. The one nearest the control panel is set first, with the VOLUME control OFF (Power switch on), BASS control on FULL, RANGE switch on 20 kc. Then the VOLUME control is turned on FULL and the second hum adjustment made. If hum still persists, the fault is often with the 6SQ7's or the 12SL7.

PHOTOFACT* Folder

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*TRADE MARK

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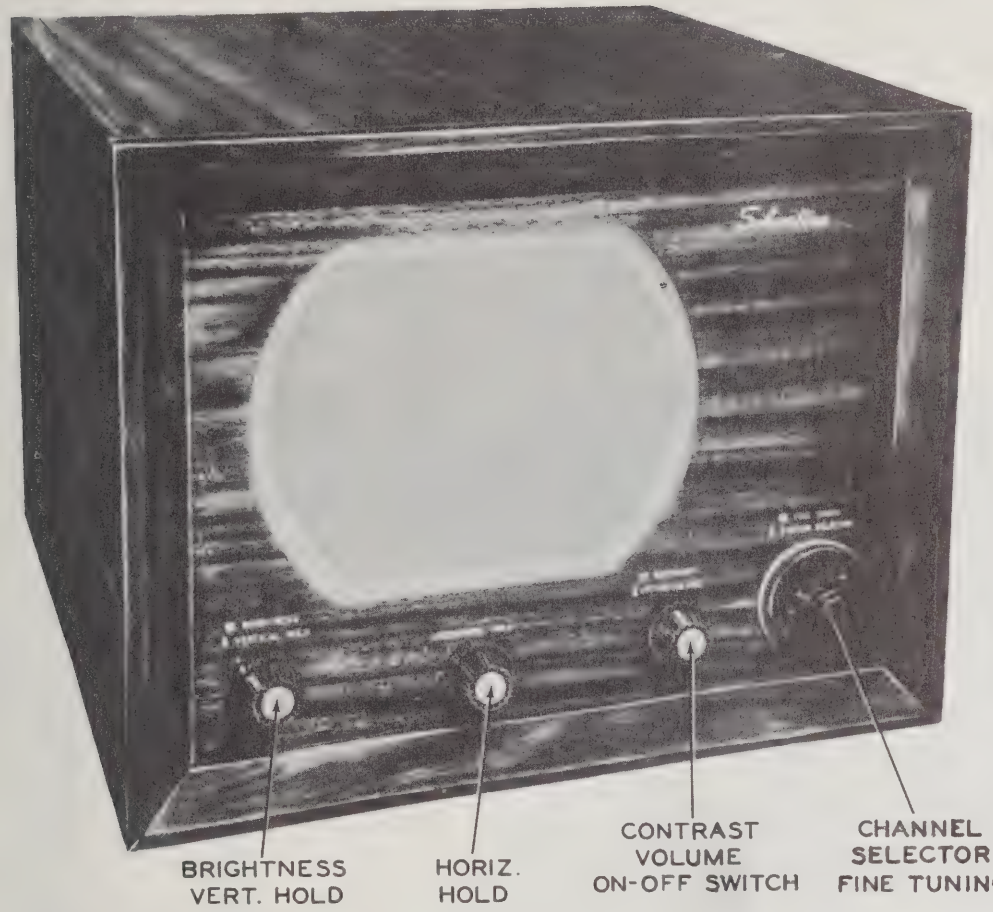

MODEL 9123

TRADE NAME	Silvertone, Models 9123 (Ch. 110.499) 9124 (Ch. 110.499-1), 9126 (Ch. 110.499-2)
SUPPLIER	Sears, Roebuck and Co., 925 S. Homan St., Chicago, Illinois
TYPE SET	Television Receiver
TUBES	Twenty One
POWER SUPPLY	110-120 Volts AC 60 Cycle
TUNING RANGE	Channels 2 thru 13
RATING	1.75 Amp. @ 117 Volts AC

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DATE 12/49 SET # 79 FOLDER # 16

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9123 (Ch. 110.499), 9124 (Ch.110.499-1),
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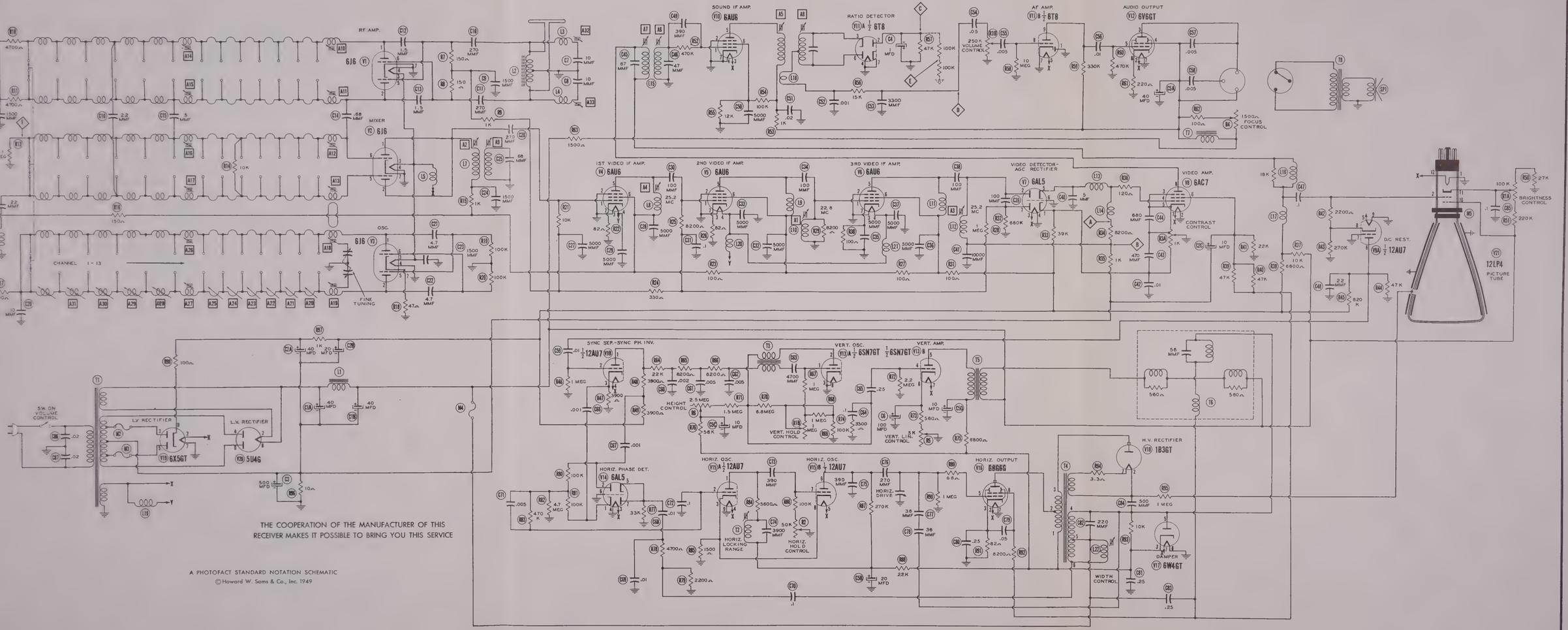

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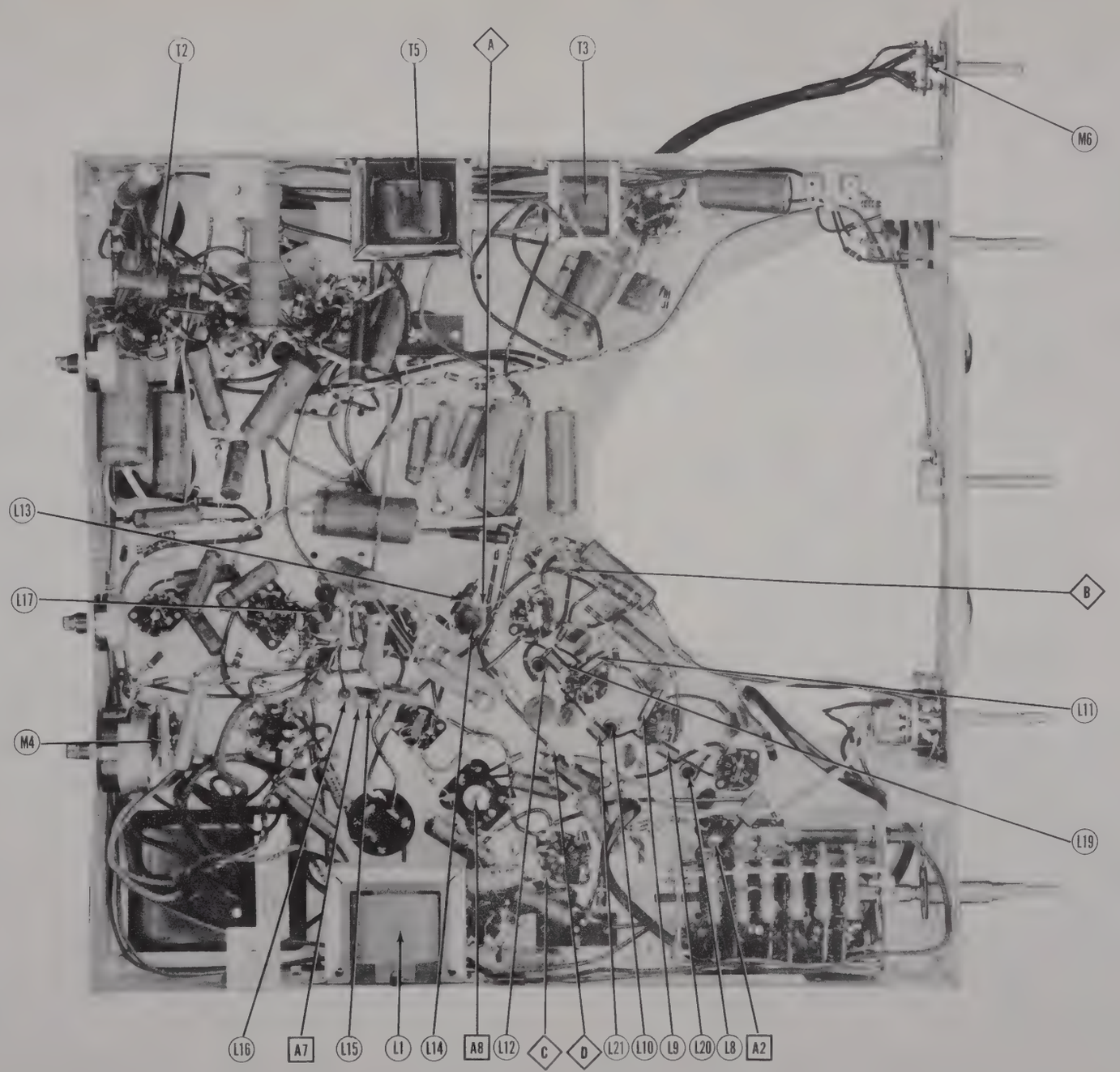
CHASSIS TOP VIEW



CHASSIS BOTTOM VIEW-TRANS., INDUCTOR AND ALIGNMENT IDENTIFICATION

VOLTAGE AND RESISTANCE MEASUREMENTS

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6J6	85VDC	85VDC	6.3VAC	0V	-.8VDC	-.8VDC	0V		
V 2	6J6	115VDC	115VDC	6.3VAC	0V	-2.4VDC	-4.6VDC	0V		
V 3	6J6	60VDC	60VDC	6.3VAC	0V	§-4.2VDC	§-3.6VDC	.4VDC		
V 4	6AU6	-.6VDC	0V	0V	6.3VAC	125VDC	125VDC	.5VDC		
V 5	6AU6	-.7VDC	0V	0V	6.3VAC	126VDC	126VDC	.6VDC		
V 6	6AU6	0V	0V	0V	6.3VAC	128VDC	128VDC	1VDC		
V 7	6AL5	0V	-2VDC	6.3VAC	0V	-1VDC	0V	-.5VDC		
V 8	6AC7	0V	0V	1.4VDC	-1.8VDC	1.4VDC	155VDC	6.3VAC	215VDC	
V 9	12AU7	125VDC	0V	5.5VDC	6.3VAC	6.3VAC	5.6VDC	0V	1VDC	0V
V 10	6AU6	-.6VDC	0V	6.3VAC	0V	245VDC	25VDC	0V		
V 11	6T8	0V	-.8VDC	-.4VDC	0V	6.3VAC	-.4VDC	0V	-.6VDC	70VDC
V 12	6V6GT	0V	6.3VAC	235VDC	250VDC	0V	245VDC	0V	12VDC	
V 13	6SN7GT	-40VDC	60VDC 140VDC	0V	0V	330VDC	6.2VDC 25VDC	6.3VAC	0V	
V 14	6AL5	2.2VDC	-1.2VDC	6.3VAC	0V	0V	0V	0V		
V 15	12AU7	240VDC	.2VDC	10VDC	6.3VAC	6.3VAC	100VDC	-3.6VDC	10VDC	0V
V 16	6BG6G	0V	6.3VAC	7.5VDC	-1.7VDC	-1.4VDC	-1.3VDC	0V	250VDC	TOP CAP ♦
V 17	6W4GT	0V	250VDC	410VDC	125VDC	340VDC	410VDC	6.3VAC	0V	
V 18	1B3GT	♦ Do not Measure								
V 19	6X5GT	0V	0.3VAC	165VAC	135VDC	165VAC	0V	0V	175VDC	
V 20	5U4G	0V	370VDC	340VDC	365VAC	0V	365VAC	340VDC	370VDC	
V 21	12LP4	0V	1VDC	PIN 10 340VDC	PIN 11 125VDC	PIN 12 6.3VAC				

♦ Do not measure.
§ Taken with Vacuum Tube Voltmeter

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6J6	†4KΩ	†4KΩ	.2Ω	0Ω	1.6Meg.	1.6Meg.	0Ω		
V 2	6J6	†2KΩ	†2KΩ	.2Ω	0Ω	1 Meg.	1 Meg.	0Ω		
V 3	6J6	†5.6KΩ	†5.6KΩ	.2Ω	0Ω	100KΩ	100KΩ	47Ω		
V 4	6AU6	1.6 Meg.	0Ω	0Ω	.2Ω	†1200Ω	†1200Ω	80Ω		
V 5	6AU6	1.6 Meg.	0Ω	0Ω	.2Ω	†1200Ω	†1200Ω	80Ω		
V 6	6AU6	.2Ω	0Ω	0Ω	.2Ω	†1000Ω	†1000Ω	100Ω		
V 7	6AL5	1Ω	1000Ω	.2Ω	0Ω	10KΩ	0Ω	68.0KΩ		
V 8	6AC7	0Ω	0Ω	750Ω	10KΩ	750Ω	20KΩ	.2Ω	*10KΩ	
V 9	12AU7	†10KΩ	1 Meg.	3900Ω	.2Ω	.2Ω	47KΩ	0Ω	270KΩ	0Ω
V 10	6AU6	470KΩ	0Ω	.2Ω	0Ω	*3KΩ	*26KΩ	0Ω		
V 11	6T8	0Ω	47KΩ	Inf.	0Ω	.2Ω	Inf.	0Ω	10 Meg.	*330KΩ
V 12	6V6GT	Inf.	.2Ω	*2000	*1800Ω	470KΩ	15KΩ	0Ω	220Ω	
V 13	6SN7GT	2 Meg.	♦2.8Meg. ♦1.5Meg.	0Ω	2.2 Meg.	♦7KΩ	5.6KΩ 60Ω	.2Ω	0Ω	
V 14	6AL5	4.7Meg.	4.7 Meg.	.2Ω	0Ω	33KΩ	0Ω	33KΩ		
V 15	12AU7	♦27KΩ	4.7 Meg.	1500Ω	.2Ω	.2Ω	♦280KΩ	150KΩ	150Ω	0Ω
V 16	6BG6G	Inf.	.2Ω	80Ω	50KΩ	1 Meg.	1 Meg.	0Ω	*8200Ω	♦100Ω
V 17	6W4GT	2500Ω	♦22KΩ	♦0Ω	100KΩ	♦10KΩ	♦0Ω	.2Ω	0Ω	
V 18	1B3GT	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	TOP CAP ♦300Ω
V 19	6X5GT	Inf.	.2Ω	20Ω	†1000Ω	20Ω	Inf.	0Ω	20KΩ	
V 20	5U4G	Inf.	20KΩ	20KΩ	40Ω	Inf.	3Ω	20KΩ	20KΩ	
V 21	12LP4	0Ω	270KΩ	PIN 10 *150Ω	PIN 11 100KΩ	PIN 12 .5Ω				

† Measured from pin 8 of V19
* Measured from pin 2 of V20
♦ Measured from pin 3 of V17

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltage measured at 1,000 ohms.
2. Pin numbers are counted in a clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings.
5. Front panels controls set at minimum.
6. Where readings may vary according to the setting of the service controls, both minimum and maximum readings are given.

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

If set is to be aligned with the picture tube removed, remove the horizontal oscillator tube V15 to disable the high voltage.

The local oscillator tube V3 should be removed during IF Alignment to prevent erroneous indications.

VIDEO IF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.		High side to ungrounded tube shield floating over mixer tube V2. Low side to chassis.	22.8MC (Unmod.)	Any	DC Probe to Point (A) Common to Point (B)	A1,A2	Adjust for maximum deflection.
2.		"	25.2MC (Unmod.)	"	"	A3,A4	"
3.		"	21.25MC (Unmod.)	"	"	A9	Adjust for MINIMUM deflection.

OVERALL VIDEO IF RESPONSE CHECK

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
4.		High side to ungrounded tube shield floating over mixer tube V2. Low side to chassis.	24MC (10MC Sweep)	22.8MC 25.2MC	Any	Vert. Amp. to Point (A) Low side to chassis.		Check for response as per Fig 1. with markers as shown. If necessary SLIGHTLY retouch A1, A2, A3, and A4 for optimum response.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Connect two matched 100KΩ (±1%) resistors in series from Point C to chassis. The junction of these two resistors is alignment Point E as shown on the schematic.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
4.	.01MFD	High side to pin 4 (Grid) of 6AC7 (V10) Low side to chassis.	4.5MC (Unmod.)	Any	DC Probe to Point (C) Common to chassis.	A5,A6, A7	Adjust for maximum deflection.
5.	.01MFD	"	"	"	DC Probe to Point (D) Common to Point (E)	A8	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting. Continue with step 7.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
5.	.01MFD	High side to pin 4 (Grid) of 6AC7 (V8). Low side to chassis.	4.5MC (450KC Sweep)	4.5MC	Any	Vert. Amp. to Point (C) Low side to chassis.	A5,A6, A7	Disconnect stabilizer capacitor C4. Adjust A5, A6, and A7 for maximum amplitude and symmetry as per Fig 2.
6.	.01MFD	"	"	"	"	Vert. Amp. to Point (D) Low side to chassis.	A5,A8	Reconnect stabilizer capacitor C4. Adjust A8 so 4.5MC marker occurs at center of crossover lines as per Fig 3. SLIGHTLY retouch A5 for maximum amplitude and straightness of crossover lines.

RF & MIXER ALIGNMENT—TUNER #1

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

Connect a 1000MMF capacitor from the grid of the first video amplifier (6AU6, V4) to chassis. Keep leads short as possible.

Connect the DC Probe of VTVM to the junction of R24 and C31, common to chassis. Set contrast control to read -3V.

The signal generator should be terminated with a resistance equal to its output impedance (usually 50 ohms).

These adjustments are normally very stable and alignment should not be attempted unless they are known to be out of alignment.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
7.	Two 120Ω carbon res.	Across antenna terminals with 120Ω in each lead.	177MC (10MC Sweep)	175.25MC 179.75MC	7	Vert. Amp. thru 10KΩ to Point (R) Low side to chassis.	A10,A11 A12,A13	Adjust for approximately flat top response as per Fig 4 with markers above 70%.
8.	"	"	185MC (10MC Sweep)	181.25MC 185.75MC	8	"		Check for response curve as per Fig 4.
9.	"	"	189MC (10MC Sweep)	187.25MC 191.75MC	9	"		"
10.	"	"	195MC (10MC Sweep)	193.25MC 197.75MC	10	"		"
11.	"	"	201MC (10MC Sweep)	199.25MC 203.75MC	11	"		"
12.	"	"	207MC (10MC Sweep)	205.25MC 209.75MC	12	"		"
13.	"	"	213MC (10MC Sweep)	211.25MC 215.75MC	13	"		"

If markers are below 70% on any channel make slight adjustment of A10, A11, A12, and A13 with channel selector on that channel. Recheck all high band channels.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
14.	Two 120Ω carbon res.	Across antenna terminals with 120Ω in each lead.	85MC (10MC Sweep)	83.25MC 87.75MC	6	Vert. Amp. thru 10KΩ to Point (F) Low side to chassis.	A14,A15 A16,A17	Adjust for approximately flat top response as per Fig. 4 with markers above 70%.
15.	"	"	79MC (10MC Sweep)	77.25MC 81.75MC	5	"		Check for response as per Fig 4.
16.	"	"	69MC (10MC Sweep)	67.25MC 71.75MC	4	"		"
17	"	"	63MC (10MC Sweep)	61.25MC 65.75MC	3	"		"
18.	"	"	57MC (10MC Sweep)	55.25MC 59.75MC	2	"		"
	If markers are below 70% on any channel make slight adjustment of A14, A15 A16, and A17 with channel selector on that channel. Recheck all low band channels.							

OSCILLATOR ALIGNMENT-TUNER #1

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
19.	Two 120Ω carbon res.	Across antenna terminals with 120Ω in each lead.	213MC (10MC Sweep)	211.25MC 215.75MC	13	Vert. Amp. to Point (A) Low side to chassis.	A18,A19	Adjust for response curve as per Fig 5 with markers as shown.
20.	"	"	207MC (10MC Sweep)	205.25MC 209.75MC	12	"	A20	"
21.	"	"	201MC (10MC Sweep)	199.25MC 203.75MC	11	"	A21	"
22.	"	"	195MC (10MC Sweep)	193.25MC 197.75MC	10	"	A22	"
23.	"	"	189MC (10MC Sweep)	187.25MC 191.75MC	9	"	A23	"
24.	"	"	183MC (10MC Sweep)	181.25MC 185.75MC	8	"	A24	"
25.	"	"	177MC (10MC Sweep)	175.25MC 179.75MC	7	"	A25	"
26.	"	"	85MC (10MC Sweep)	83.25MC 87.75MC	6	"	A26,A27	"
27.	"	"	79MC (10MC Sweep)	77.25MC 81.75MC	5	"	A28	"
28.	"	"	69MC (10MC Sweep)	67.25MC 71.75MC	4	"	A29	"
29.	"	"	63MC (10MC Sweep)	61.25MC 65.75MC	3	"	A30	"
30.	"	"	57MC (10MC Sweep)	55.25MC 59.75MC	2	"	A31	"

WAVE TRAP ADJUSTMENT

Wave traps A32 and A33 are used for specific types of interference and their alignment will depend upon the type encountered. With the receiver tuned to the channel having the interference, set fine tuning control until interference is at maximum. Adjust A32 and A33 for minimum interference in the picture and sound, keeping the cores at approximately the same relative position. Turn one core 1/2 turn, adjust the other for minimum interference.

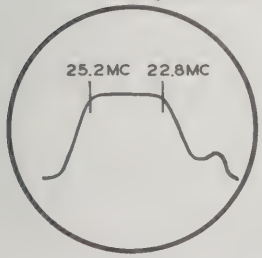


FIG. 1

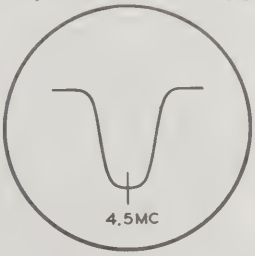


FIG. 2

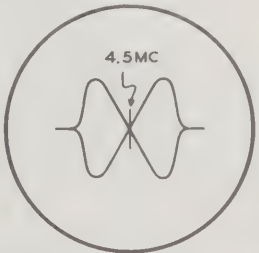


FIG. 3

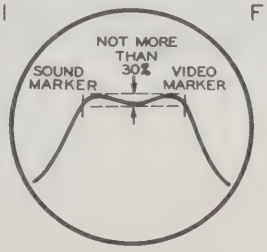


FIG. 4

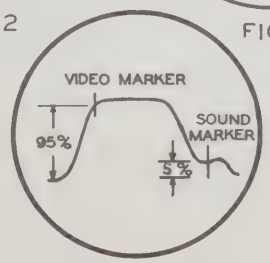
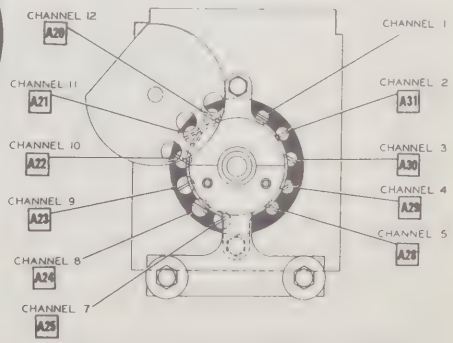


FIG. 5



RF OSCILLATOR ALIGNMENT POINTS

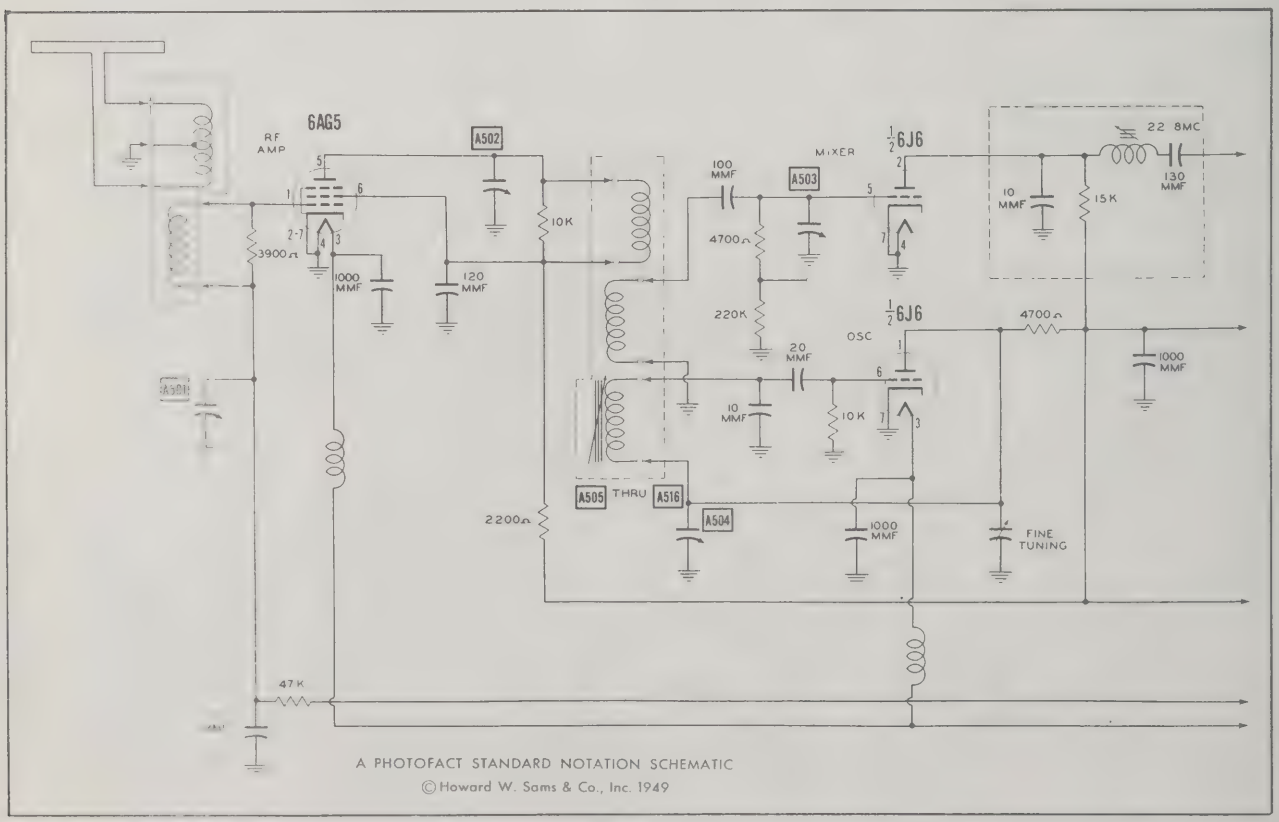
SILVERTONE MODELS
9123 (Ch. 110.499), 9124 (Ch.110.499-1),
9126 (Ch. 110.499-2)

ALIGNMENT INSTRUCTIONS (CONT.)

RF & OSCILLATOR ALIGNMENT (TUNER #2)

The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the contrast control to measure 1 volt on a VTVM connected between pin 5 of V8 and chassis.
Complete oscillator alignment may not be necessary. If the oscillator seems to be off frequency approximately the same amount for a majority of the channels, it may be possible to correct them in one step using A504. It should be noted that this is an all channel oscillator circuit adjustment and should not be adjusted for any individual channel. If adjustment of A504 will not bring all channels within the range of the fine tuning control, it will be necessary to use the individual channel oscillator adjustment for each channel that is off frequency (step 32). The individual channel oscillator adjustments are reached through a hold just to the right of the channel switch shaft. The correct adjustment screw is accessible through this hole as the channel switch is turned to each channel.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
31.	Two 120Ω carbon res.	Across antenna terminals with 120Ω in each lead.	207MC (10MC Sweep)	205.25MC 209.75MC	12	Vert. Amp. to Point A. Low side to chassis.	A501, A502, A503	Adjust for response curve similar to Fig 5.
32.	"	"	213MC (10MC Sweep)	211.25MC 215.75MC	13	"	A505	Adjust to place markers as shown in Fig 5.
			207MC (10MC Sweep)	205.25MC 209.75MC	12		A506	
			201MC (10MC Sweep)	199.25MC 203.75MC	11		A507	
			195MC (10MC Sweep)	193.25MC 197.75MC	10		A508	
			189MC (10MC Sweep)	187.25MC 191.75MC	9		A509	
			183MC (10MC Sweep)	181.25MC 185.75MC	8		A510	
			177MC (10MC Sweep)	175.25MC 179.75MC	7		A511	
			85MC (10MC Sweep)	83.25MC 87.75MC	6		A512	
			79MC (10MC Sweep)	77.25MC 81.75MC	5		A513	
			69MC (10MC Sweep)	67.25MC 71.75MC	4		A514	
			63MC (10MC Sweep)	61.25MC 65.75MC	3		A515	
			57MC (10MC Sweep)	55.25MC 59.75MC	2		A516	



A PHOTOFACT STANDARD NOTATION SCHEMATIC

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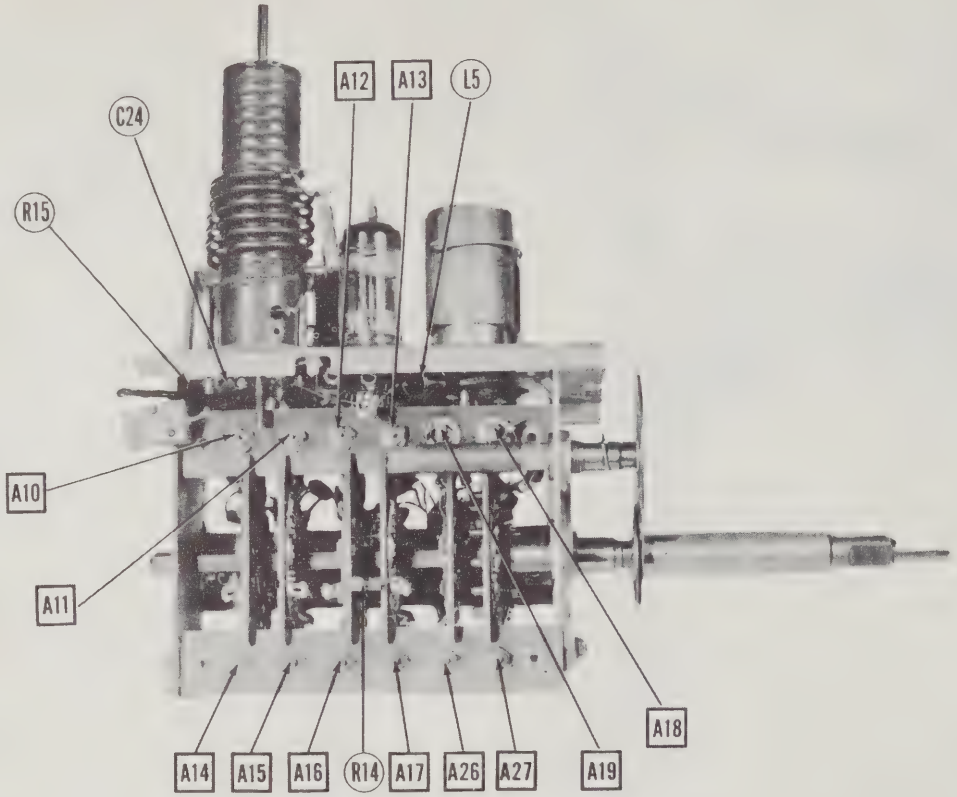
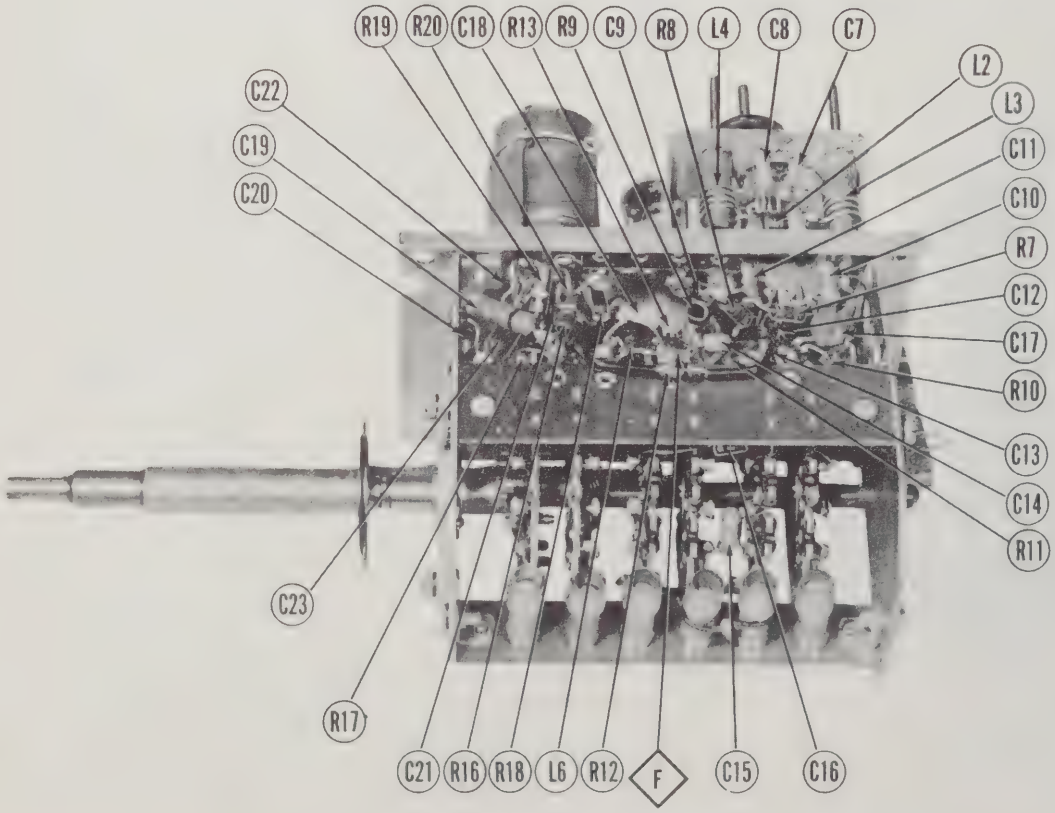
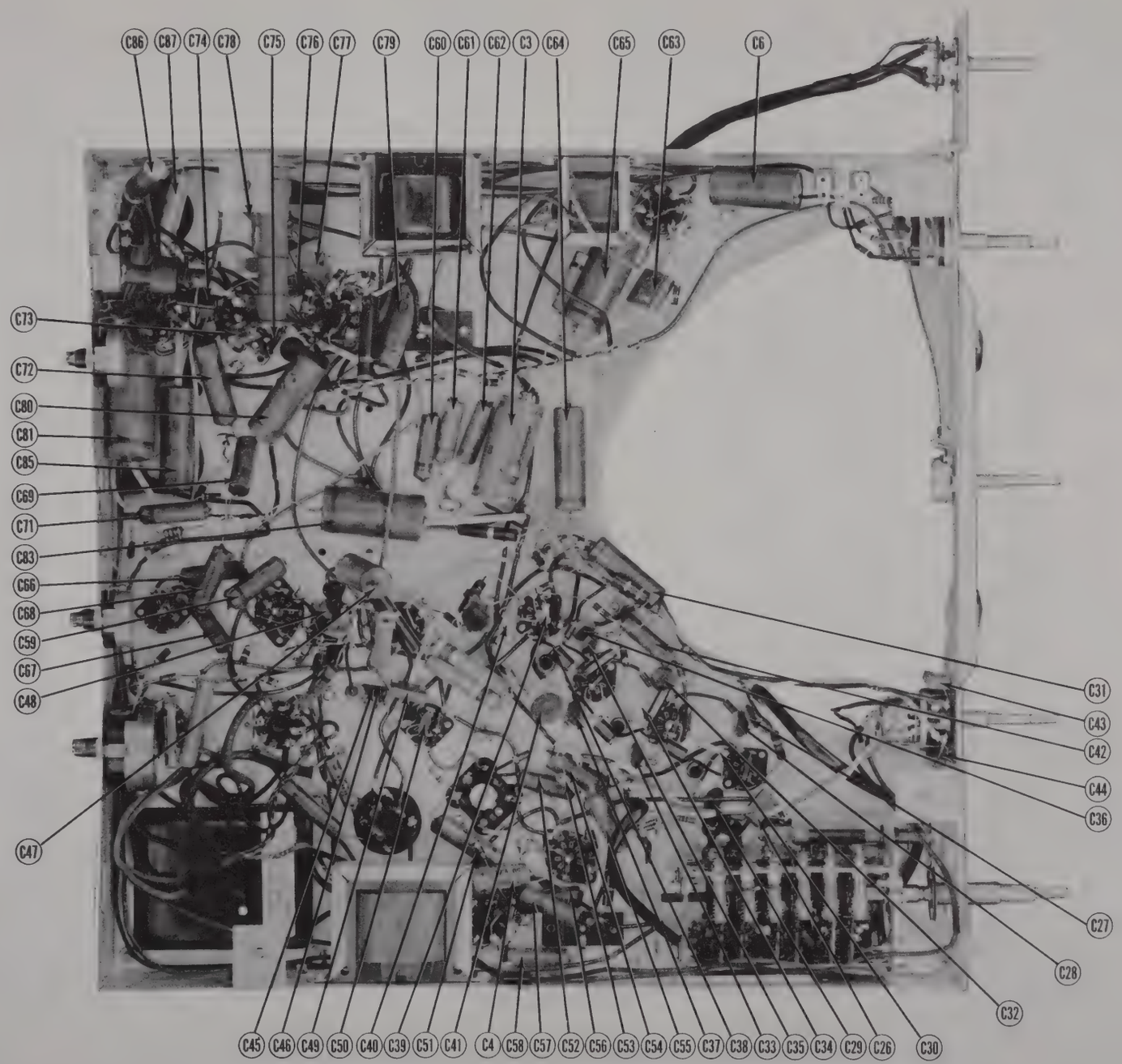
RF TUNER #2



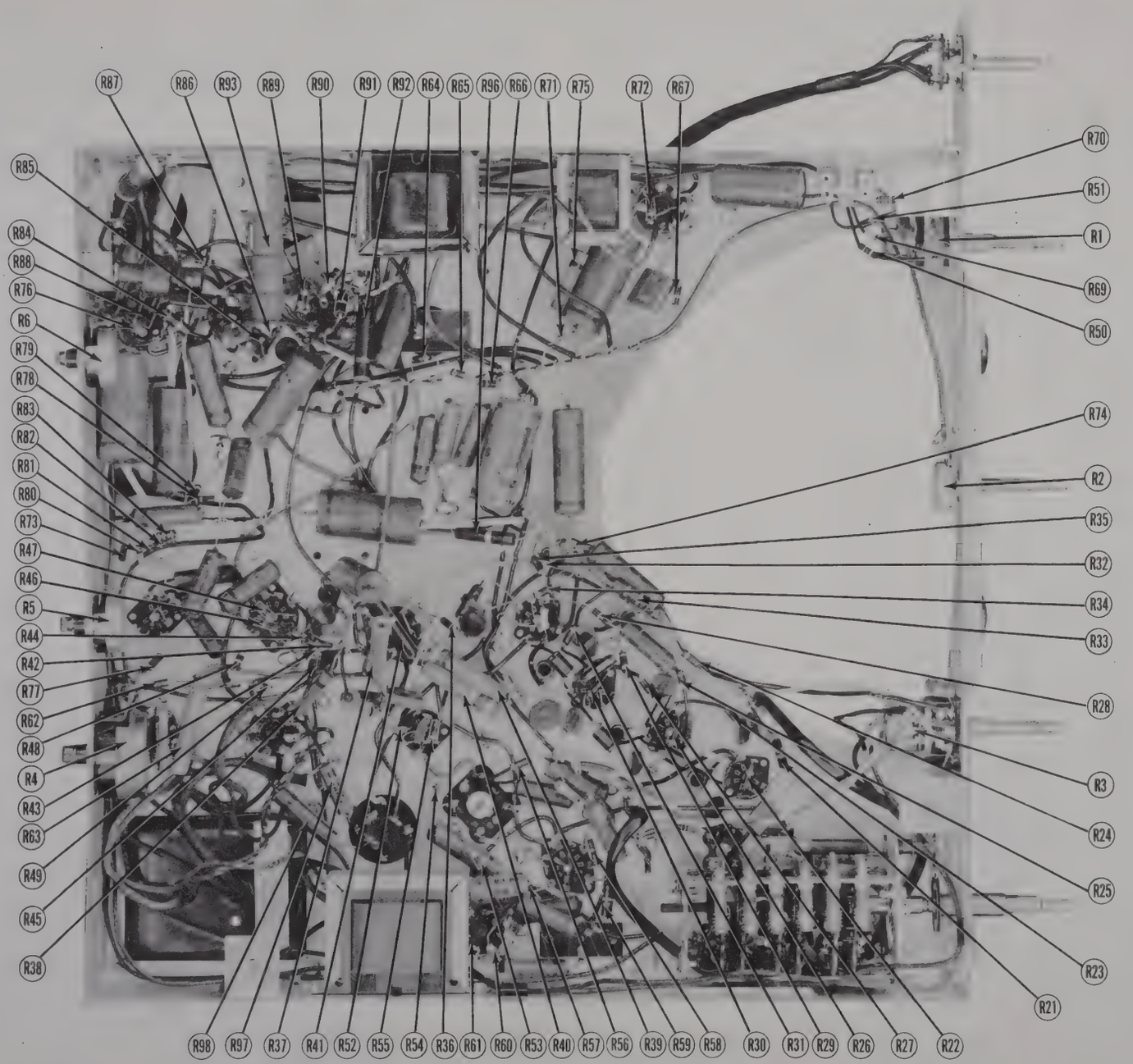
RF TUNER-LEFT SIDE



RF TUNER-RIGHT SIDE



CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION



CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION

SILVERTONE MODELS
9123 (Ch. 110.499), 9124 (Ch. 110.499-1), 9126 (Ch. 110.499-2)

TUBE PLACEMENT CHART

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: SILVERTONE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	EIA BASE TYPE	NOTES
V1A	RF Amp.	6J6	6J6	7BF	Used in Tuner #1
B	RF Amp.	6AG5	6AG5	7BD	Used in Tuner #2
V2	Mixer	6J6	6J6	7BF	
V3	Oscillator	6J6	6J6	7BF	Used in Tuner #1
V4	1st Video IF Amp.	6AU6	6AU6	7BK	
V5	2nd Video IF Amp.	6AU6	6AU6	7BK	
V6	3rd Video IF Amp.	6AU6	6AU6	7BK	
V7	Video Det.& AGC Rect.	6AL5	6AL5	6BT	
V8	Video Amp.	6AC7	6AC7	8N	
V9	DC Rest.-Sync. Sep.-Sync. Phase Inverter	12AU7	12AU7	9A	
V10	Sound IF Amp.	6AU6	6AU6	7BK	
V11	Ratio Det.-AF Amp.	6T8	6T8	9E	
V12	Audio Output	6V6GT	6V6GT	7AC	
V13	Vert. Osc.-Vert. Amp.	6SN7GT	6SN7GT	8BD	
V14	Hor. Phase Det.	6AL5	6AL5	6BT	
V15	Hor. Osc.	12AU7	12AU7	9A	
V16	Hor. Output	6BG6G	6BG6G	5BT	
V17	Damper	6W4GT	6W4GT	4CG	
V18	HV Rectifier	1B3GT	1B3GT	3C	
V19	LV Rectifier	6X5GT	6X5GT	6S	
V20	LV Rectifier	5U4G	5U4G	5T	
V21A	Picture Tube	12LP4	12LP4	12D	Used in models 9124 and 9126
B	Picture Tube	10BP4	10BP4	12D	Used in model 9123

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: SILVERTONE PART No.	REPLACEMENT DATA: AEROVOX PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: ERIE PART No.	REPLACEMENT DATA: SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	40	450	A20126	AFH88J	UP4445		TVL-64	▲ Filter
B	40	450						▲ Filter
C2A	40	250	A20127	AFH84F2D	UP43145C		D9041	■ Filter
B	20	250			§			■ Filter
C	10	150						▲ V. Amp. Screen Byp.
C3	500	6	P20128	PRS6/500	BRH605		TVA-4	Bias Filter
C4	1	50	P20129	E26B39	BBR1-50		TVA-11	Stabilizing Cap.
C5A	40	450	A20125	AF8422J	UP421145		TVL-40	▲ Filter
B	20	450						■ Decoupling
C	10	450						▲ Vert. Osc. Dec.
D	10	450						Vert. Output Dec.
C6	100	25	P20130	PRS50/100	BRH251A		TVA-8	Vert. Output Cath. Byp.
C7	10					NPOK-10		Fixed Trimmer
C8	10					NPOK-10		Fixed Trimmer
C9	1500					GP2L-0015		AGC Filter
C10	270					GP2K-270		RF Coupling
C11	270					GP2K-270		RF Coupling
C12	1.5							Neutralizing
C13	1.5							Neutralizing
C14	.68							RF Coupling
C15	5					NPOK-5		RF Coupling
C16	2.2							RF Coupling
C17	1500					GP2L-0015		RF Decoupling
C18	22					GP1K-22		Fixed Trimmer
C19	1500					GP2L-0015		Osc. Decoupling
C20	10					NPOK-10		Fixed Trimmer
C21	4.7					NPOK-4.7		Osc. Feedback
C22	4.7					NPOK-4.7		Osc. Feedback
C23	1500					GP2L-0015		Filament Bypass
C24	1500					GP2L-0015		Mixer Decoupling
C25	68							Fixed Trimmer
C26	270	500		1468-00025	5W5T25	GP1K-270	1FM-325	IF Coupling
C27	5000		P19109	1467-005	1D5D5	811-005	29C1	AGC Filter
C28	5000		P19109	1467-005	1D5D5	811-005	29C1	1st V. IF Decoupling
C29	5000		P19109	1467-005	1D5D5	811-005	29C1	1st V. IF Fil. Bypass
C30	100		P19110	1468-0001	5W5T1	GP1K-100	1FM-31	IF Coupling
C31	.1	400	P19111	P488-1	GT4P1		TM-1	AGC Filter
C32	5000		P19109	1467-005	1D5D5	811-005	29C1	2nd V. IF Decoupling
C33	5000		P19109	1467-005	1D5D5	811-005	29C1	2nd V. IF Fil. Bypass
C34	100		P19110	1468-0001	5W5T1	GP1K-100	1FM-31	IF Coupling
C35	5000		P19109	1467-005	1D5D5	811-005	29C1	3rd V. IF Cath. Bypass
C36	5000		P19109	1467-005	1D5D5	811-005	29C1	3rd V. IF Decoupling
C37	5000		P19109	1467-005	1D5D5	811-005	29C1	3rd V. IF Fil. Bypass
C38	100		P19110	1468-0001	5W5T1	GP1K-100	1FM-31	IF Coupling
C39	100		P19110	1468-0001	5W5T1	GP1K-100	1FM-31	IF Coupling *
C40	5		P19114	1468-000005	5W5V5	NPOK-5	MS-55	V. Diode Filter
C41	10000		P19113	P488-01	GT4S1	821-01	36C1	Bias Filter
C42	.01	400	P19116	P488-01	GT4S1	GP2-335-01	TM-11	AGC Filter
C43	470	500	P19105	1468-0005	5W5T5	GP2K-470	1FM-35	V. Amp. Cath. Bypass
C44	680	500	P19104		1W5T7	GP2K-680	1FM-37	V. Amp. Cath. Bypass
C45	67	500						Fixed Trimmer
C46	47			1469-00005	5R5Q5	NPOM-50	MS-45	Fixed Trimmer
C47	.1	600	P19121	P688-1	GT6P1		TM-1	Video Coupling
C48	22	500	P1990	1468-000025	5W5Q25	GP1K-22	MS-425	DC Res. Plate Bypass
C49	390	500	P19117	1468-0004	5W5T4	GP2K-390	1FM-34	S. IF Coupling †
C50	5000		P19109	1467-005	1D5D5	811-005	29C1	S. IF Screen Bypass
C51	.02	600	P19115	P688-02	GT6S2		TM-12	S. IF Decoupling
C52	.001	600	P19103	P688-001	GT6D1	GP2L-001	TM-21	Diode Load Cap.
C53	3300		P19118			GP2M-0033		De-emphasis
C54	.05	200	P19119	P288-05	GT2S5		TM-15	Audio Coupling
C55	.005	600	P1987	P688-005	GT6D5	GP2M-005	TM-25	Audio Coupling

CAPACITORS (CONT.)

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: SILVERTONE PART No.	REPLACEMENT DATA: AEROVOX PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: ERIE PART No.	REPLACEMENT DATA: SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C56	.01	600	P1988	P688-01	GT6S1	GP2-335-01	TM-11	Audio Coupling
C57	.005	600	P1987	P688-005	GT6D5	GP2M-005	TM-25	Output Plate Bypass
C58	.005	600	P1987	P688-005	GT6D5	GP2M-005	TM-25	Output Plate Bypass
C59	.01	600	P1988	P688-01	GT6S1	GP2-335-01	TM-11	Sync. Coupling
C60	.002	600	P19101	P688-002	GT6B2	GP2M-002	TM-22	Integrator Net.
C61	.005	600	P19120	P688-005	GT6D5	GP2M-005	TM-25	Integrator Net.
C62	.005	600	P19120	P688-005	GT6D5	GP2M-005	TM-25	Integrator Net.
C63	4700	500	P1992	1467-005	1D5D5	GP2M-0047	1FM-25	Vert. Osc. Grid Cap.
C64	.1	600	P19121	P688-1	GT6P1		TM-1	Vert. Discharge
C65	.25	600	P19108	684-25	GT6P25		TC-2	Vert. Sweep Coupling
C66	.001	600	P1991	P688-001	GT6D1	GP2L-001	TM-21	Hor. Sync. Coupling
C67	.001	600	P1991	P688-001	GT6D1	GP2L-001	TM-21	Hor. Sync. Coupling
C68	.01	600	P1988	P688-01	GT6S1	GP2-335-01	TM-11	AFC Filter
C69	.01	600	P1988	P688-01	GT6S1	GP2-335-01	TM-11	AFC Filter
C70	.1	600	P19100	P688-1	GT6P1		TM-1	AFC Feedback
C71	.005	600	P1987	P688-005	GT6D5	GP2M-005	TM-25	Hor. Sync. Coupling
C72	.1	200	P19111	P288-1	GT2P1		TM-1	Hor. Osc. Grid Cap.
C73	390	500	P19122	1468-0004	5W5T4	GP2K-390	1FM-34	Hor. MV Feedback
C74	3900	500	P19107					Fixed Trimmer
C75	390	500	P1993	1468-0004	5W5T4	GP2K-390	1FM-34	Hor. Discharge
C76	270	500	P1994	1468-00025	5W5T25	GP2K-270	1FM-325	Hor. Sweep Coupling
C77	36	1500	P19135					Hor. Feedback
C78	36	1500	P19135					Hor. Feedback
C79	.05	600	P19196	P688-05	GT6S5		TM-15	Hor. Output Screen Byp.
C80	.25	400	P1995	P488-25	GT4P25		TC-2	Hor. Output Cath. Bypass
C81	.25	600	P19108	684-25	GT6P25		TC-2	Damper Filter
C82	220	2500	P19136					Fixed Trimmer ‡
C83	.25	600	P19108	684-25	GT6P25		TC-2	Hor. Sweep Coupling
C84	500	10000	P1998-1			410-500		HV Filter
C85	.1	600	P1989	P688-1	GT6P1		TM-1	Pic. Tube Cath. Dec.
C86	.02	600	P19106	P688-02	GT6S2		TM-12	Line Filter
C87	.02	600	P19106	P688-02	GT6S2		TM-12	Line Filter

* Some models use 120MMF in this application.
† Some models use 39MMF in this application.
‡ Used only in models with 12 inch picture tube. Some models use four 200MMF capacitors in a series parallel combination in this application.
§ Omit bypass section.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: SILVERTONE PART No.	REPLACEMENT DATA: IRC PART No.	REPLACEMENT DATA: CLAROSTAT PART No.	INSTALLATION NOTES
R1A	100KΩ	½	A24100	B11-128 ♦		Brightness Control-Front } Dual
B	1 Meg.	½		B11-137 ♦		Vertical Hold - Rear } Concentric
C	Shaft End	½		E187 ♦		Attach per instructions in "Concentrikit".
R2	50KΩ	½	A24101	Q11-123		Horiz. Hold Control
R3A	1000Ω	2	A2499			Contrast Control, Tapped @ 750Ω, Wire Wound
B	250KΩ	½				Volume Control and Switch (Dual Concentric)
R4	1500Ω	4	P2525		10-1500	Focus Control (Wire Wound)
R5	500Ω	½	P2523	Q11-114	M-19-S	Vert. Linearity Control
R6	2.5Meg.	½	P2524	Q11-239		Height Control

♦ Additional parts to be used with "Concentrikit".

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: SILVERTONE PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES ALL RESISTORS ARE ± 10% UNLESS OTHERWISE STATED
R7	150Ω	‡			RF Grid
R8	150Ω	‡			RF Grid
R9	1000Ω	‡			Bias Filter
R10	4700Ω	‡			RF Plate
R11	4700Ω	‡			RF Plate
R12	1000Ω	‡			RF Decoupling
R13	1 Meg.	‡			Mixer Grid
R14	10KΩ	‡		BTS-10K	Mixer Grid Shunt
R15	1000Ω	‡		BTS-1000	Mixer Decoupling
R16	150Ω	‡			Decoupling
R17	4700Ω	‡			Osc. Plate
R18	47Ω	‡			Osc. Cathode
R19	100KΩ	‡			Osc. Grid
R20	100KΩ	‡			Osc. Grid
R21	10KΩ	‡	P23108		1st Video IF Grid
R22	82Ω	‡	P23148		1st Video IF Cathode
R23	100Ω	‡	P23109		1st Video IF Decoupling
R24	330Ω	‡	P23110		AGC Network
R25	82000Ω	‡	P23111		2nd Video IF Grid
R26	82Ω	‡	P23148		2nd Video IF Cathode
R27	100Ω	‡	P23109		2nd Video IF Decoupling
R28	1 Meg.	‡	P23112		AGC Network
R29	82000Ω	‡	P23111		3rd Video IF Grid Coil Shunt
R30	100Ω	‡	P23109		3rd Video IF Cathode
R31	100Ω	‡	P23109		3rd Video IF Decoupling
R32	680KΩ	‡	P23113	BTS-680K	AGC Diode Load
R33	39KΩ	1	P23107	BTA-39K	Voltage Divider
R34	8200Ω	‡	P23111	BTS-8200	Video Det. Diode Load
R35	1000Ω	‡	P23114	BTS-1000	Bias Network
R36	120Ω	‡	P23115		Parasitic Supp.
R37	10KΩ	7	P23101	AB-10K	Video Amp. Plate (Wire Wound)
R38	68000Ω 20%	1	P23117	BT-1-6800	Video Amp. Plate
R39	47KΩ	2	P23116	BT-2-47K	Filter
R40	47KΩ	2	P23116	BT-2-47K	Filter
R41	22KΩ	2	P23100	BT-2-22K	Bleeder
R42	22000Ω	‡	P23128	BTS-2200	Picture Tube Grid
R43	270KΩ	‡	P23129	BTS-270K	DC Rest. Load
R44	47KΩ	‡	P23131	BTS-47K	DC Rest. Load
R45	820KΩ	‡	P23130	BTS-820K	Voltage Divider
R46	1 Meg.	‡	P23112	BTS-1 Meg.	Sync. Sep. Grid
R47	3900Ω	‡	P23132	BTS-3900	Sync. Sep. Cathode
R48	3900Ω	‡	P23132	BTS-3900	Sync. Sep. Plate
R49	3900Ω	‡	P23132	BTS-3900	Sync. Sep. Plate

RESISTORS (CONT.)

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: SILVERTONE PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES
R50	27KΩ	‡	P23126	BTS-27K	Voltage Divider
R51	220KΩ	‡	P23127	BTS-220K	Voltage Divider
R52	470KΩ	‡	P23118	BTS-470K	Sound IF Grid
R53	1000Ω	‡	P23114	BTS-1000	Sound IF Plate Decoupling
R54	100KΩ	‡	P23120	BTS-100K	Sound IF Screen
R55	12KΩ	‡	P23119	BTS-12K	Voltage Divider
R56	15KΩ	‡	P23121	BTS-15K	De-emphasis
R57	47KΩ	‡	P23147	BTS-47K	Ratio Det. Diode Load
R58	10 Meg.	‡	P23123	BTS-10 Meg.	AF Grid
R59	330KΩ	1	P23124	BTA-330K	AF Plate
R60	470KΩ	‡	P23118	BTS-470K	Output Grid
R61	220Ω	1	P23125	BW-1-220	Output Cathode
R62	100Ω	‡	P23109	BW-½-100	Focus Coil Shunt
R63	15000Ω	7	P21101	AB-1500	Series Focus Coil
R64	22KΩ	‡	P23122	BTS-22K	Integrator
R65	8200Ω	‡	P23111	BTS-8200	Integrator
R66	8200Ω	‡	P23111	BTS-8200	Integrator
R67	1 Meg.	‡	P23112	BTS-1 Meg.	Vert. Osc. Grid See Note 1
R68	1 Meg.	‡	P23112	BTS-1 Meg.	Vert. Osc. Grid See Note 2
R69	100KΩ	‡	P23120	BTS-100K	Voltage Divider
R70	6.8 Meg.	‡	P23150	BTS-6.8 Meg.	Voltage Divider
R71	1.5 Meg.	‡	P23135	BTS-1.5 Meg.	Vert. Osc. Plate See Note 3
R72	2.2 Meg.	‡	P23134	BTS-2.2 Meg.	Vert. Amp. Grid
R73	560Ω	‡	P23137	BTS-560	Vert. Amp. Cathode
R74	3300Ω	‡	P23136	BTS-3300	Vert. Peaking
R75	6800Ω 20%	2	P23133	BT-2-6800	Filter
R76	56KΩ	‡	P23146	BTS-56K	Filter
R77	33KΩ	‡	P23138	BTS-33K	Feedback Network
R78	4700Ω	‡	P23139	BTS-4700	Feedback Network
R79	2200Ω	‡	P23128	BTS-2200	Feedback Network
R80	100KΩ	‡	P23120	BTS-100K	Horiz. Phase Det. Load
R81	100KΩ	‡	P23120	BTS-100K	Horiz. Phase Det. Load
R82	4.7 Meg.	‡	P23140	BTS-4.7 Meg.	Horiz. Phase Det. Load
R83	470KΩ	‡	P23118	BTS-470K	Horiz. AFC Filter Network
R84	5600Ω	1	P23103	BTA-5600	Horiz. Osc. Plate
R85	1500Ω	‡	P23141	BTS-1500	Horiz. Osc. Cathode
R86	100KΩ	‡	P23120	BTS-100K	Horiz. Osc. Grid
R87	270KΩ	‡	P23129	BTS-270K	Horiz. Osc. Plate Decoupling
R88	22KΩ	2	P23100	BT-2-22K	Filter
R89	68Ω	‡	P23142		Parasitic Supp.
R90	1 Meg.	‡	P23112	BTS-1 Meg.	Horiz. Output Grid
R91	82Ω	1	P23143	BW-1-82	Horiz. Output Cathode
R92	82000Ω 5%	2	P23106	BT-2-8200-5%	Horiz. Output Screen
R93	10KΩ	20	A21100		Damper Filter Tapped @ 7500Ω, Wire Wound
R94	3.3Ω	1	P23144		HV Filament Wire Wound
R95	1 Meg.	2	P23145		HV Filter
R96	10Ω	1	P23104	BW-1-10	Bias Network Wire Wound
R97	1000Ω	4	P21102	AB-1000	Filter Wire Wound
R98	100Ω	2	AE233-2228		Surge Limiter Wire Wound

Note 1. Some models use 1.2 Meg resistor in this application.
Note 2. Not used in all models.
Note 3. Some models use 1 Meg resistor in this application.

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: SILVERTONE PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: MERIT PART No.	REPLACEMENT DATA: CHICAGO PART No.
T1	117VAC @ 1.75A	780VCT .195ADC 350VCT .040ADC	5VAC @ 3A	6.3VAC @ 9.1A	A1098			

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING: DC RESISTANCE PRI.	RATING: DC RESISTANCE SEC.	REPLACEMENT DATA: SILVERTONE PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: MERIT PART No.	REPLACEMENT DATA: CHICAGO PART No.	NOTES
T2	10Ω		A28263				Hor. AFC Coil
T3	170Ω	150Ω	A1099	A-8111††	A-3000††	TBO-1††	Vert. Block Osc.Trans
T4	32Ω	SEC. 1	A1095	A-8117		TFB-1	Hor. Output Trans.
	Tap @ 105Ω	11Ω Tap @ .6Ω					
		SEC. 2 0Ω					
T5	1200Ω	9.4Ω	A1352	A-8112	A-3035##	TSO-4 ##	Vert. Output Trans.
T6A	14Ω		A28261	DY-1			Hor.Deflection Coil
B	6Ω						Vert.Deflection Coil
T7	990Ω		A28260				Focus Coil

Drill new mounting holes.
†† Drill one new mounting hole.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: SILVERTONE PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: MERIT PART No.	REPLACEMENT DATA: CHICAGO PART No.	INSTALLATION NOTES
T8	4200Ω	3.5Ω	400Ω	.7Ω		A-3877††	A-3026	RO-8††	†† Drill one new mounting hole.

SILVERTONE MODELS
9123 (Ch. 110.499), 9124 (Ch.110.499-1),
9126 (Ch. 110.499-2)

PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			NOTES
	FIELD RES.	V. C. IMP.	SILVERTONE PART No.	JENSEN PART No.	QUAM PART No.	
SP1A	PM	3.5Ω	A58121 §	ST-119 ≠ MOD.P10-T	10A4A	≠ Replace output trans. to match 6-8Ω voice coil. § Used in console models only. ▲ 5" speaker used in table models only.
B	PM		A5866 ▲			
	CONE DIA.	V. C. DIA.				
SP2A B	9 3/4"	3/4"				

FILTER CHOKE

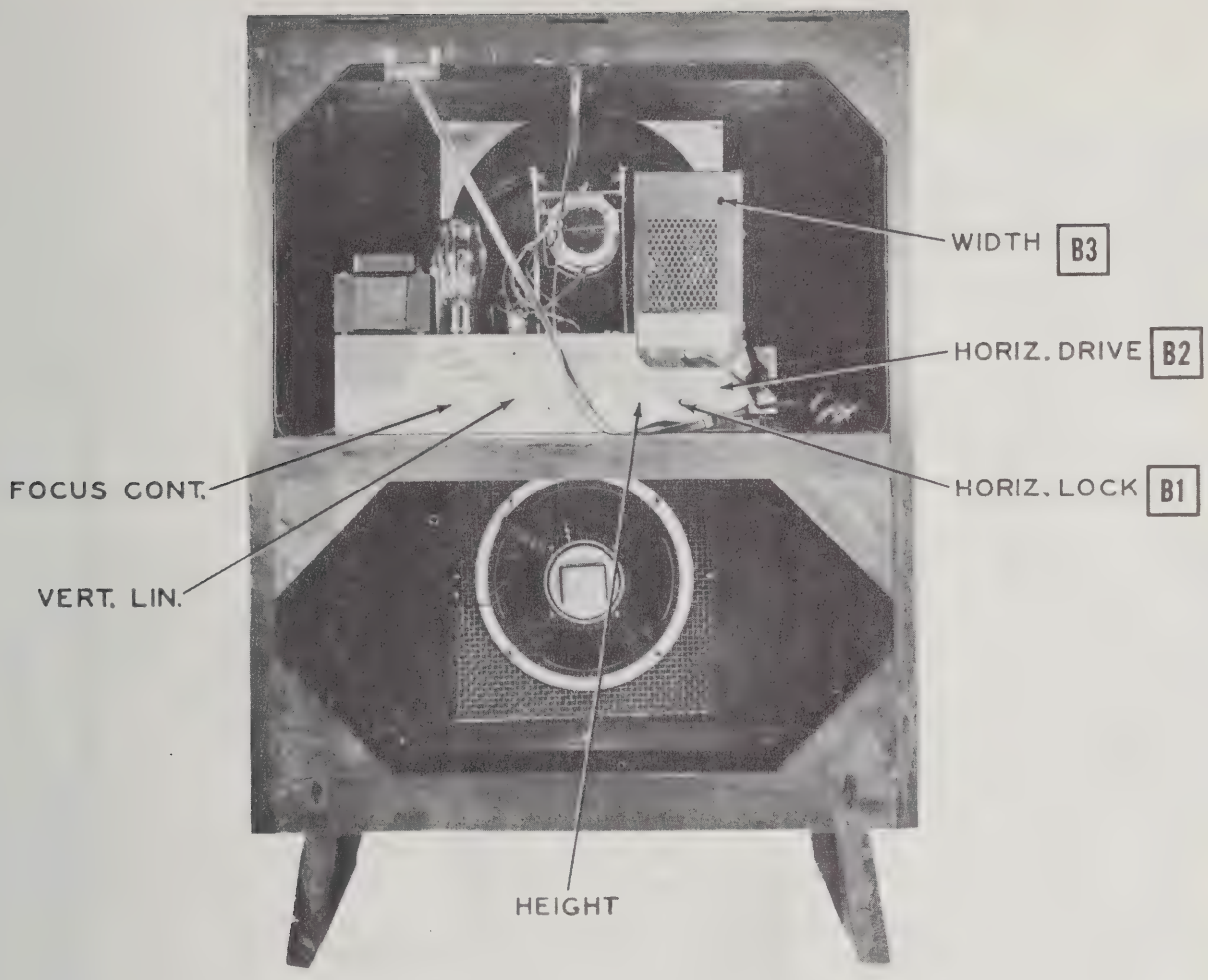
ITEM No.	RATINGS			REPLACEMENT DATA				INSTALLATION NOTES
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ∿)	SILVERTONE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
L1	.195A	170Ω	6.6Henries	A1404	C-2225	C-2991††	TR-4200	†† Drill one new mounting hole.

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	SILVERTONE PART No.	MEISSNER PART No.	
L2	Ant. Input	0Ω				Part of RF tuner #1.
L3	Interference Trap	0Ω				Part of RF tuner #1.
L4	Interference Trap	0Ω				Part of RF tuner #1.
L5	Fil. Choke	.1Ω		A23264		
L6	Mixer Grid Trap	0Ω				Part of RF tuner #1.
L7	1st Video IF	.1Ω	0Ω			Part of RF tuner #1.
L8	2nd Video IF	.2Ω		A3392		
L9	IF Choke	3Ω		A28253		
L10	3rd Video IF	.2Ω		A3392		
L11	IF Choke	3Ω		A28253		
L12	4th Video IF	.2Ω		A3392		
L13	Peaking	7Ω		A28255-1		
L14	Peaking	20Ω		A28262		
L15	Sound Take-Off	1.5Ω	1.5Ω	A28254		
L16	Peaking	11Ω		A28255-3		
L17	Peaking	14Ω		A28255-4		
L18	Ratio Det.	8Ω	1Ω	A3393		
L19	Fil. Choke	.1Ω		A23264		
L20	Fil. Choke	.1Ω		A28264		
L21	Fil. Choke	.1Ω		A23264		
L22	Horiz. Width Control	.5Ω		A28258		

MISCELLANEOUS

ITEM No.	PART NAME	SILVERTONE PART No.	NOTES
M1A	Tuner Assembly	A54616	Tuner #1
B	Tuner Assembly	A54617	Tuner #2
M2	Fuse		Not used on all models.
M3	Fuse		Not used on all models.
M4	Fuse	A54682	Type 3AG 1/4 Amp.
M5	Ion Trap	A54623	PM Type
	Socket	A18101	Speaker
	Socket	A18156	Picture Tube
	Cabinet	A6066	Model 9123
	Cabinet	A6067	Model 9124
	Cabinet	A6068	Model 9126
	Knob	A39187	On - Off - Volume Control
	Knob	A39189	Horiz. Hold Control
	Knob	A39187	Vert. Hold Control
	Knob	A38188	Contrast Control
	Knob	A39188-1	Brightness Control
	Knob	A39192-1	Ant. Switch - Model 9126 Only
	Knob	A39191	Channel Selector
	Knob	A39190	Fine Tuning Control
	Safety Glass	A62260	Models 9124 and 9126
	Safety Glass	A62256	Model 9123



CABINET-REAR VIEW

DISASSEMBLY INSTRUCTIONS

1. Remove 5 push-on type knobs from controls.
2. Remove 10 screws holding rear cover. Remove cover.
3. Remove speaker plug from top left side of TV chassis.
4. Disconnect two antenna plugs.
5. Remove four 7/16" hex head bolts holding TV chassis to cabinet. Remove TV chassis.
6. Remove four 11/32" hex nuts holding speaker to cabinet. Remove speaker.

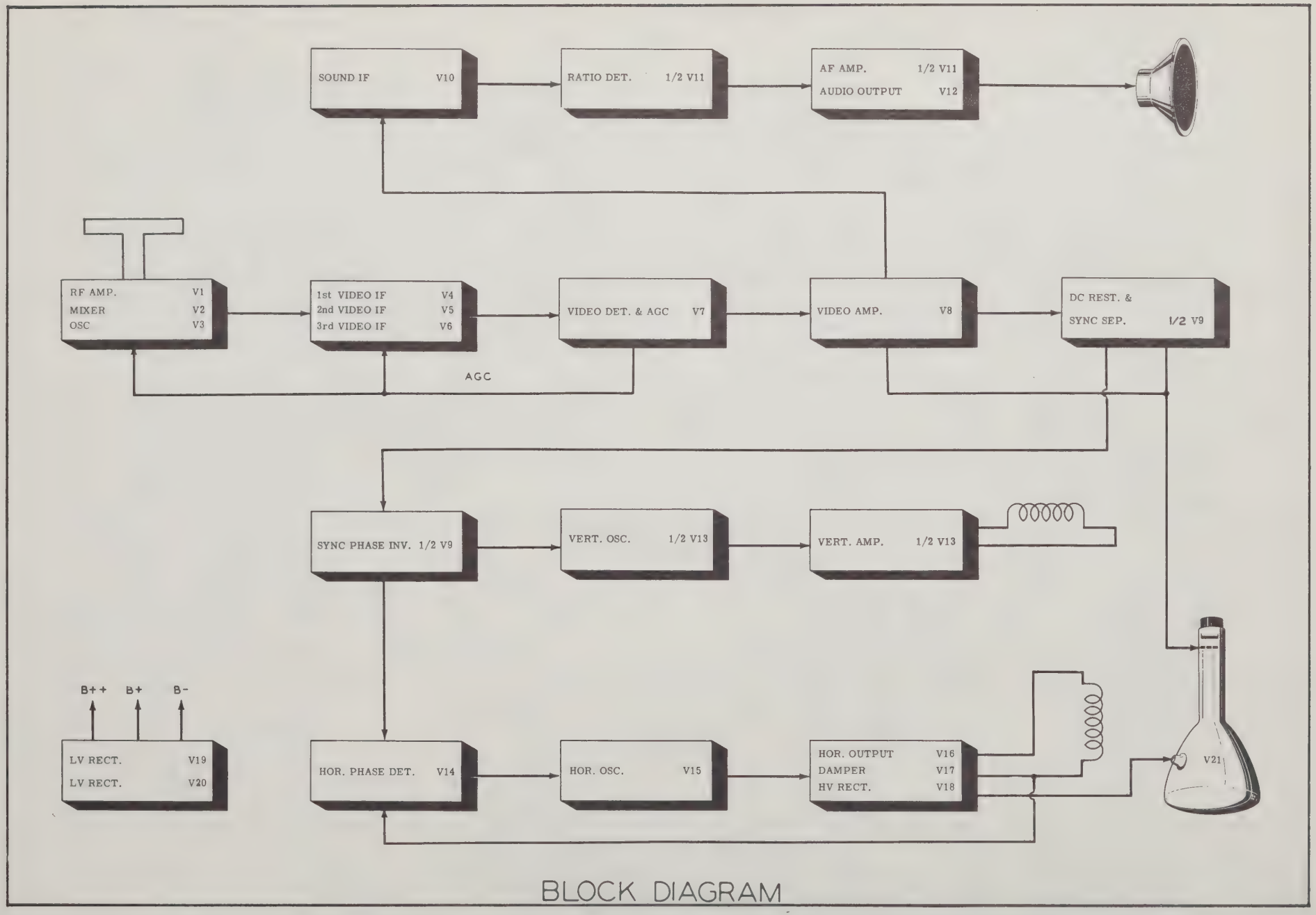
HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the receiver on and tune in a test pattern. Turn vertical hold control to sync picture vertically.

Turn the horizontal hold control to the mid-position of its range. Adjust B1 until picture syncs normally in the horizontal plane.

Adjust B2 for the best compromise between brightness and horizontal linearity.

Adjust B3 so that picture fills the mask horizontally.



BLOCK DIAGRAM

PHOTOFACT* Folder

*TRADE MARK

RTMA MEMBER RADIO-TELEVISION MANUFACTURERS ASSOCIATION

STROMBERG-CARLSON
MODEL TC-10

IMPORTANT FILING NOTICE

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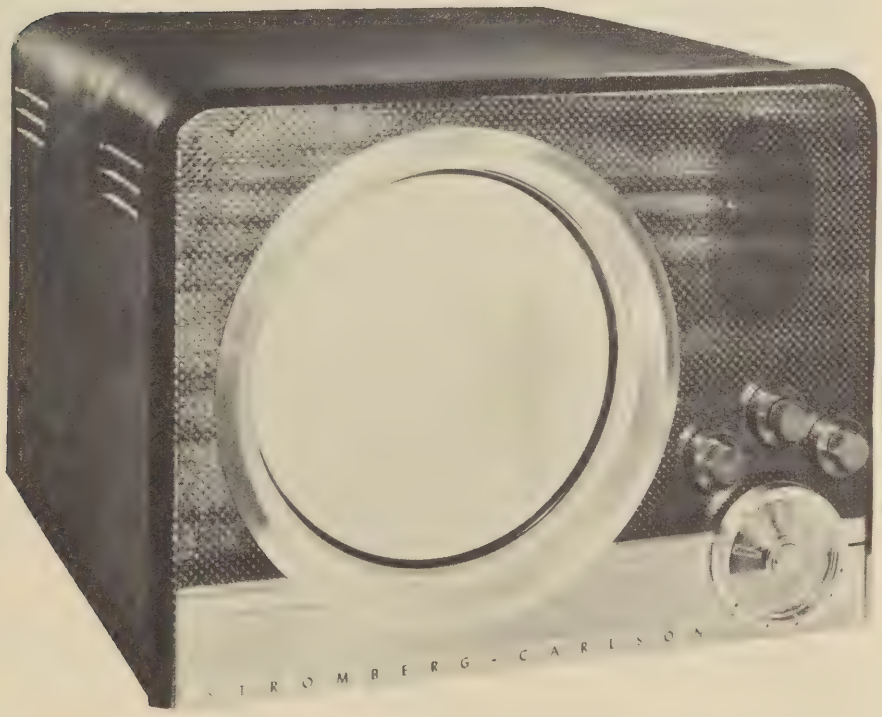
Merely insert the corresponding folder on this model in this envelope to retain proper filing and indexing order.



STROMBERG-CARLSON
MODEL TC-10

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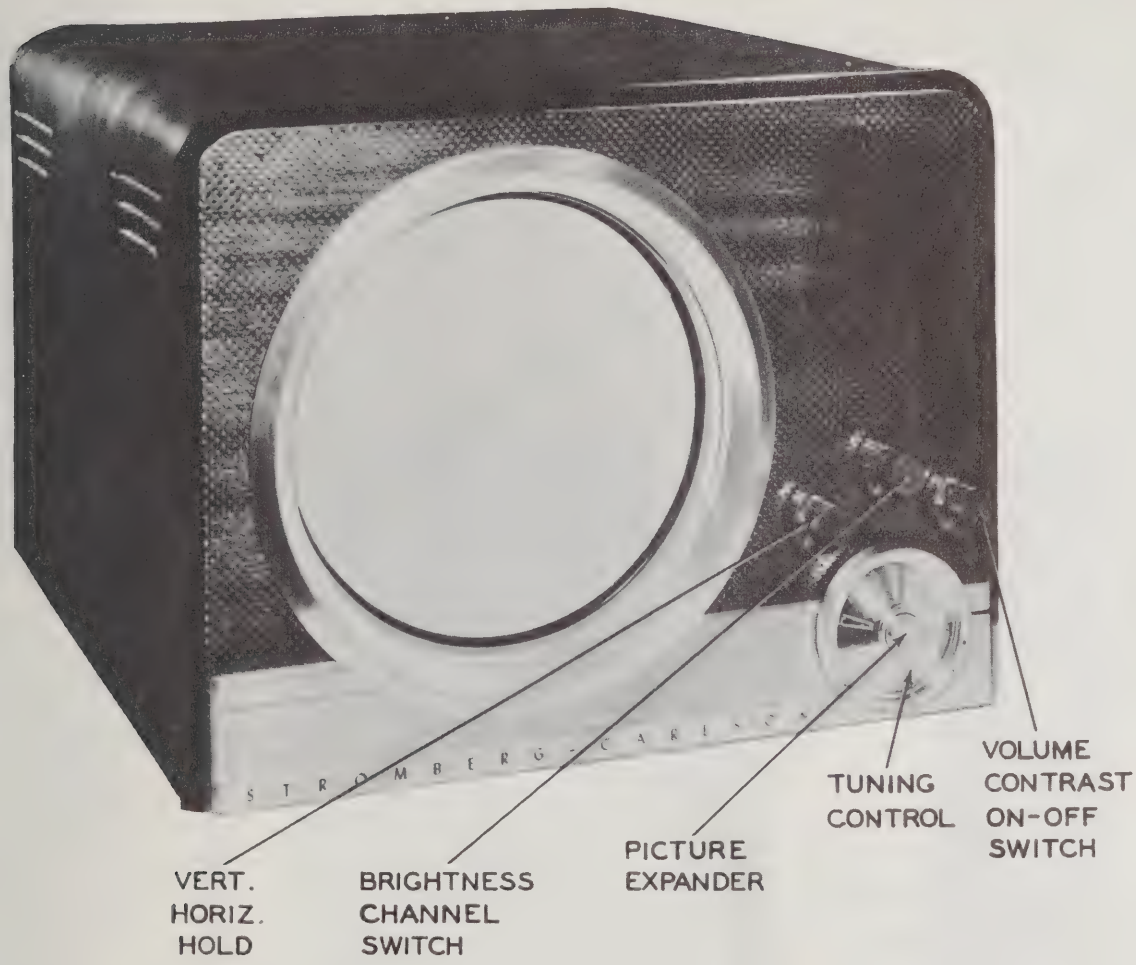
Date 12/49 Set No. 79—Folder No. 17

STROMBERG-CARLSON MODEL TC-10



STROMBERG-CARLSON MODEL TC-10

TRADE NAME Stromberg-Carlson, Model TC-10
MANUFACTURER Stromberg-Carlson Co., 100 Carlson Rd., Rochester 3, New York
TYPE SET Television Receiver
TUBES Twenty Two

POWER SUPPLY 110-120 Volts AC-60 Cycle RATING: 1.8 Amp. @ 117 Volts AC
TUNING RANGE—Channels 2 thru 13

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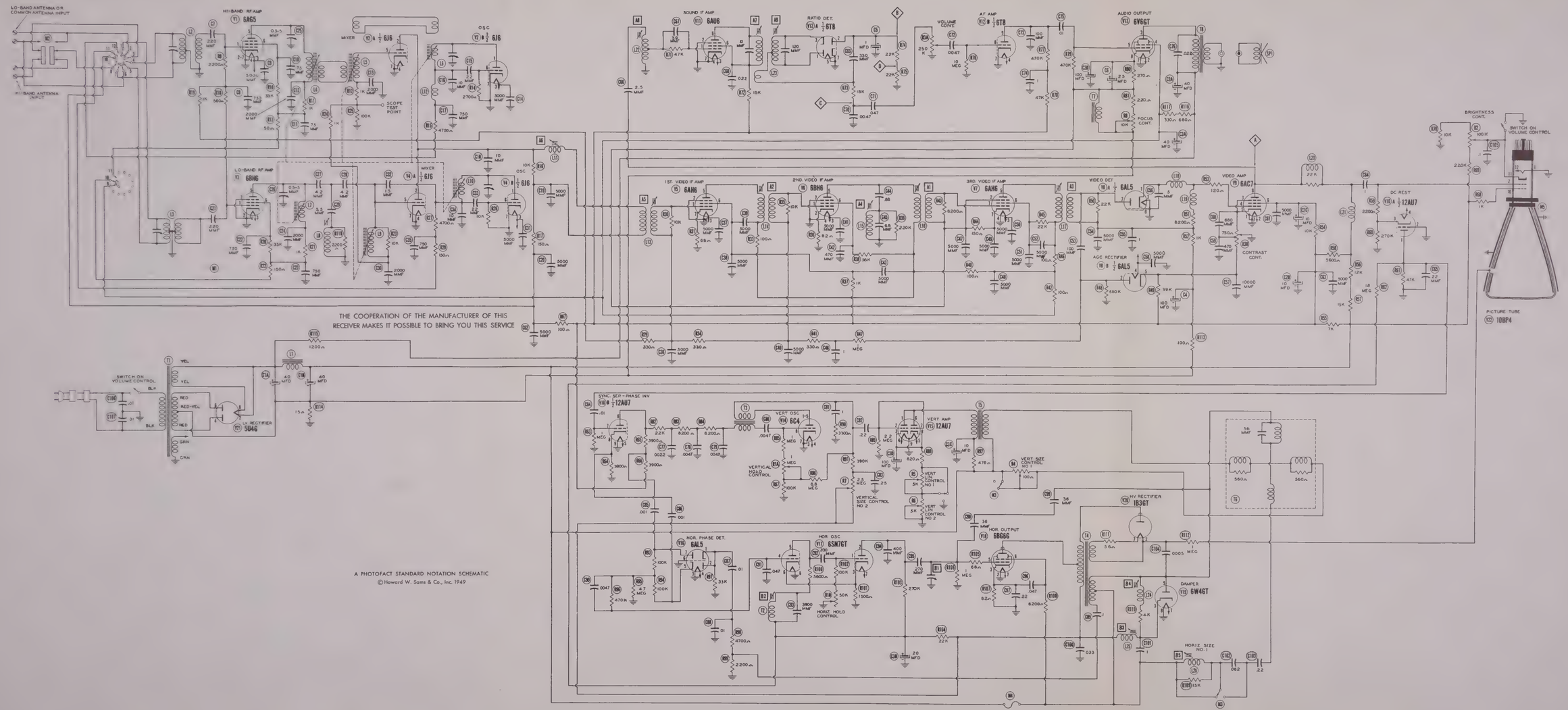
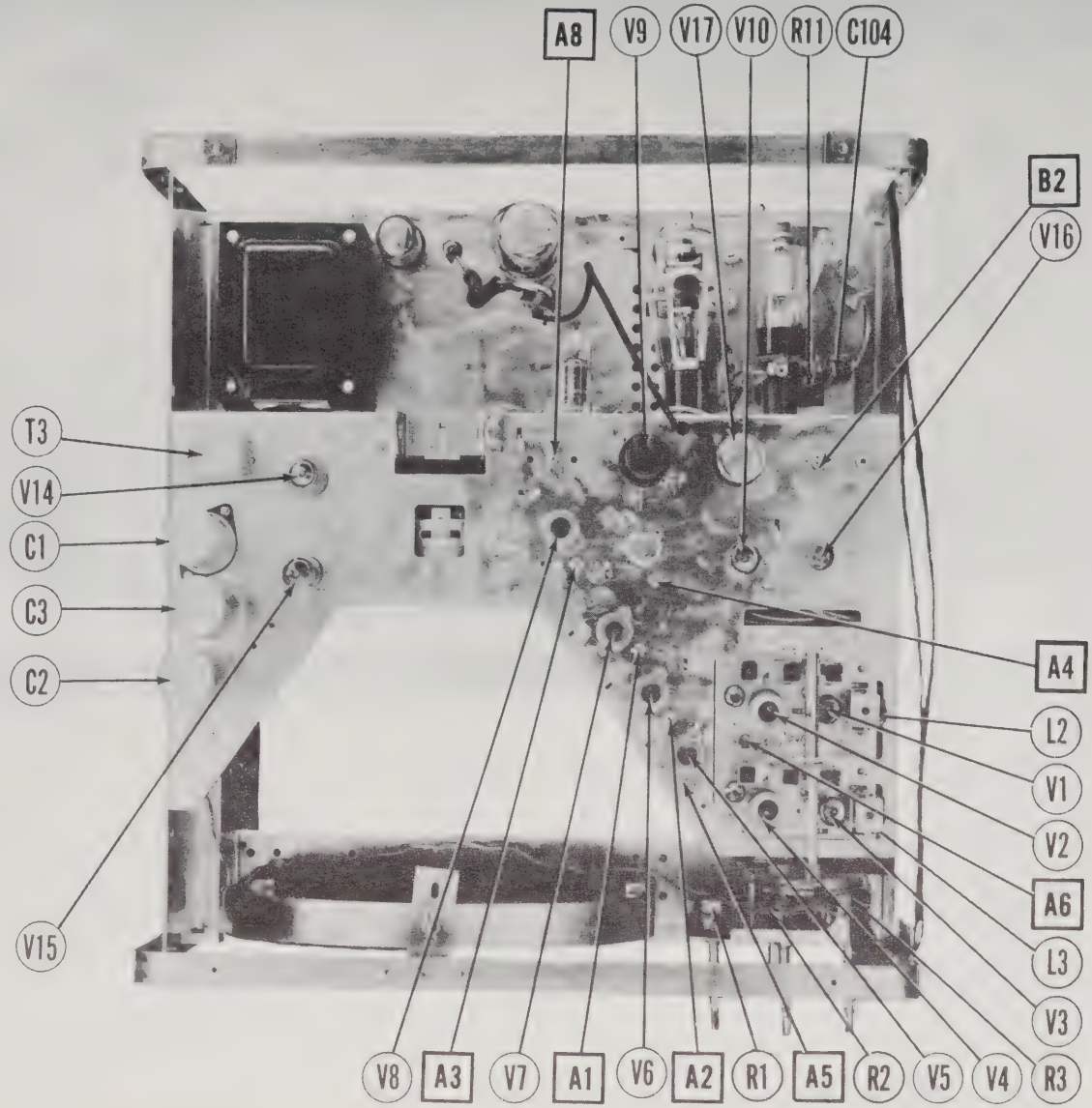
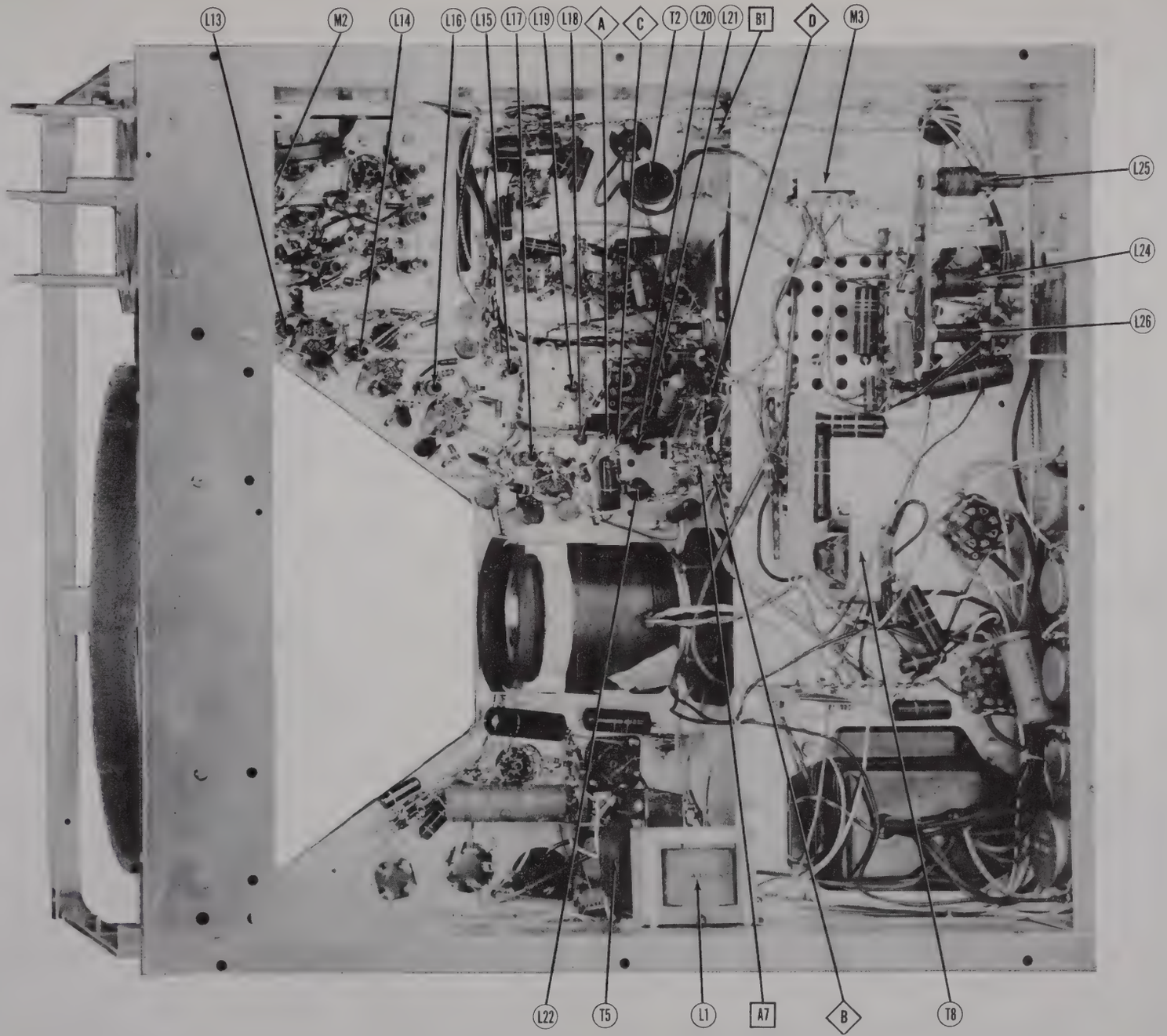
DATE 12/49 SET # 79 FOLDER # 17



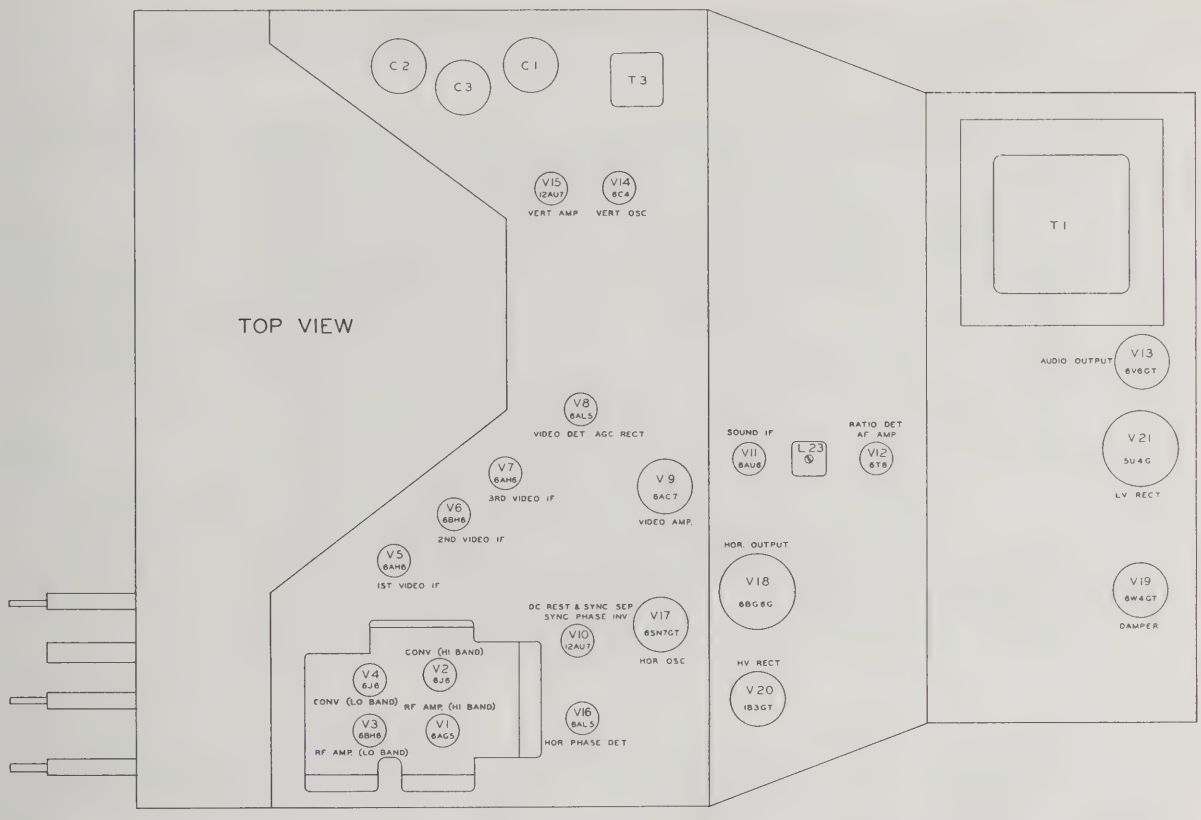
STROMBERG-CARLSON
MODEL TC-10

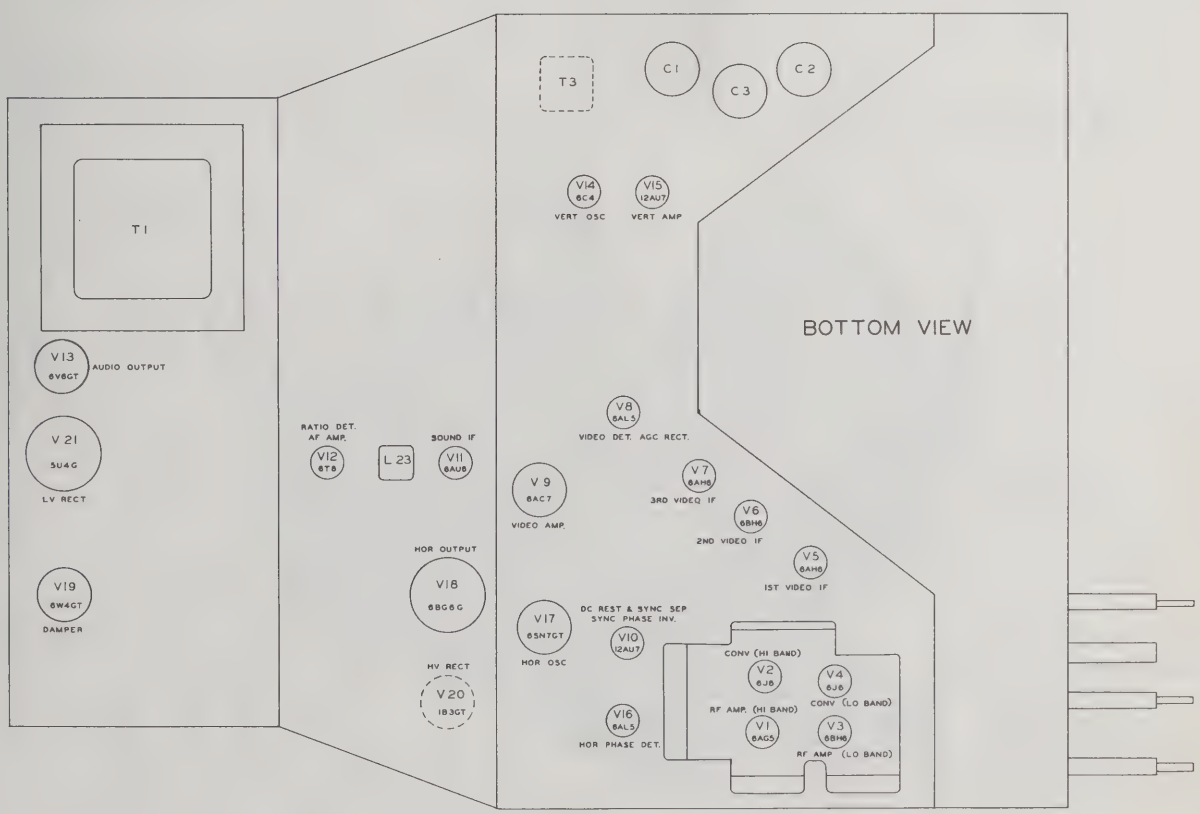


CHASSIS TOP VIEW



CHASSIS BOTTOM VIEW-TRANS., INDUCTOR AND ALIGNMENT IDENTIFICATION





TUBE PLACEMENT CHART

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

If the picture tube is removed during alignment, remove the horizontal oscillator tube V17, to eliminate the high voltage shock hazard.
Connect the negative lead of a 3 volt battery to the junction of R41 and R47.
Connect the positive lead to chassis.
Set the contrast control to maximum clockwise.

VIDEO IF ALIGNMENT

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.
Turn the band switch to the "low" band position (counter-clockwise).
Turn the tuning control to a point where spurious signals from the local oscillator do not distort the pattern on the scope.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	See Fig 1.	High side thru dummy to pin 1 (Grid) of 6BA6 (V5). Low side to chassis.	25MC (10MC Sweep)	23.35MC 26.4MC	See note above	Vert. Amp. to Point (A) Low side to chassis.	A1,A2, A3	Note that A1 is tuned near 23.35MC, and A2 is tuned near 26.4MC. A3 is tuned between A1, A2. Adjust for response curve similar to Fig 2. The markers should appear at 70%.
2.	Direct	High side to ungrounded tube shield floating over converter tube (V4). Low side to chassis.	"	21.9MC (maximum output)	"	"	A4	Adjust for MINIMUM response at 21.9MC as shown in Fig 3.
3.	Direct	"	"	23.35MC 26.4MC	"	"	A5,A6	Adjust for response curve similar to Fig 4 with markers at 50%. If necessary SLIGHTLY retouch A1 thru A6 for best symmetry of pattern.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
4.	.05MFD	High side to pin 4 (Grid) of 6AC7 (V9). Low side to chassis.	4.5MC (Unmod.)	Any channel unused locally	DC Probe to Point (B) Low side to chassis.	A7,A8	Adjust for maximum deflection.
5.	.05MFD	"	"	"	DC Probe to Point (C) Low side to Point (D)	A9	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Note that step 4 is performed using 400∿ AM modulation, if the FM signal generator has no AM modulation, use an AM signal generator for this step. Check to see that the 4.5MC calibrations on both signal generators are accurate.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
4.	.05MFD	High side to pin 4 (Grid) of 6AC7 (V9). Low side to chassis.	4.5MC (400∿ Mod.)	Any channel unused locally	Vert. Amp. thru crystal probe Fig 4. to pin 2 (picture tube). Low side to chassis.	A8	Adjust for MINIMUM 400∿ response on scope.
5.	.05MFD	"	4.5MC (450KC Sweep)	"	Vert. Amp. to Point (C) Low side to chassis.	A9,A7	Adjust A9 so 4.5MC occurs at center of crossover lines as per Fig 5. Adjust A7 for maximum amplitude and straightness of crossover lines.

The RF portion of this receiver is tuned at the factory and should not require adjustment in the field.

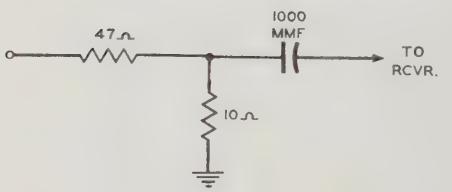


FIG 1

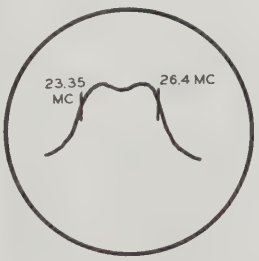


FIG 2

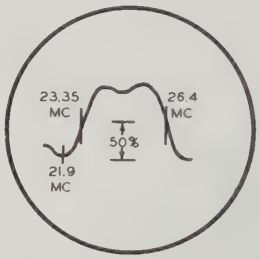


FIG 3

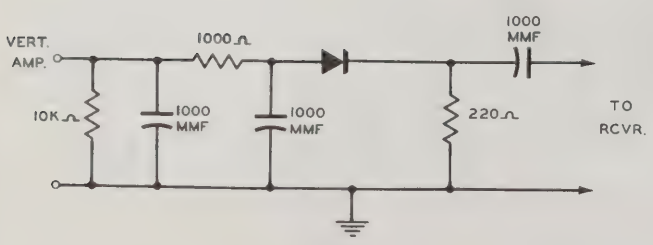


FIG 4

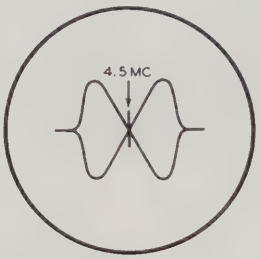
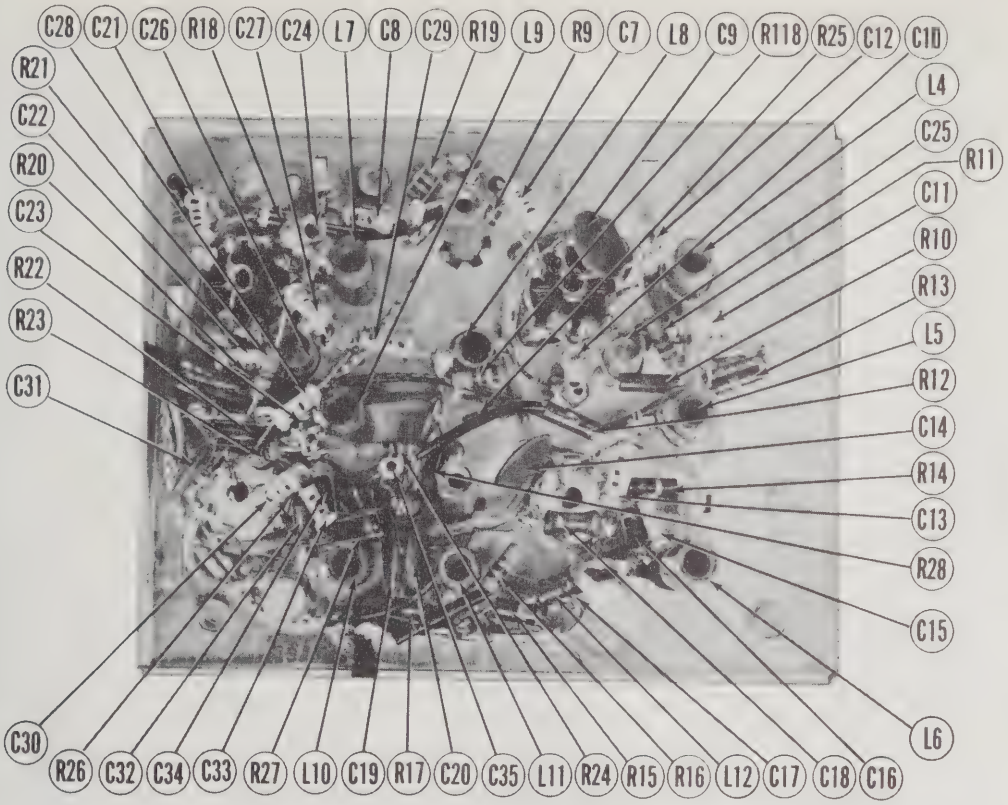
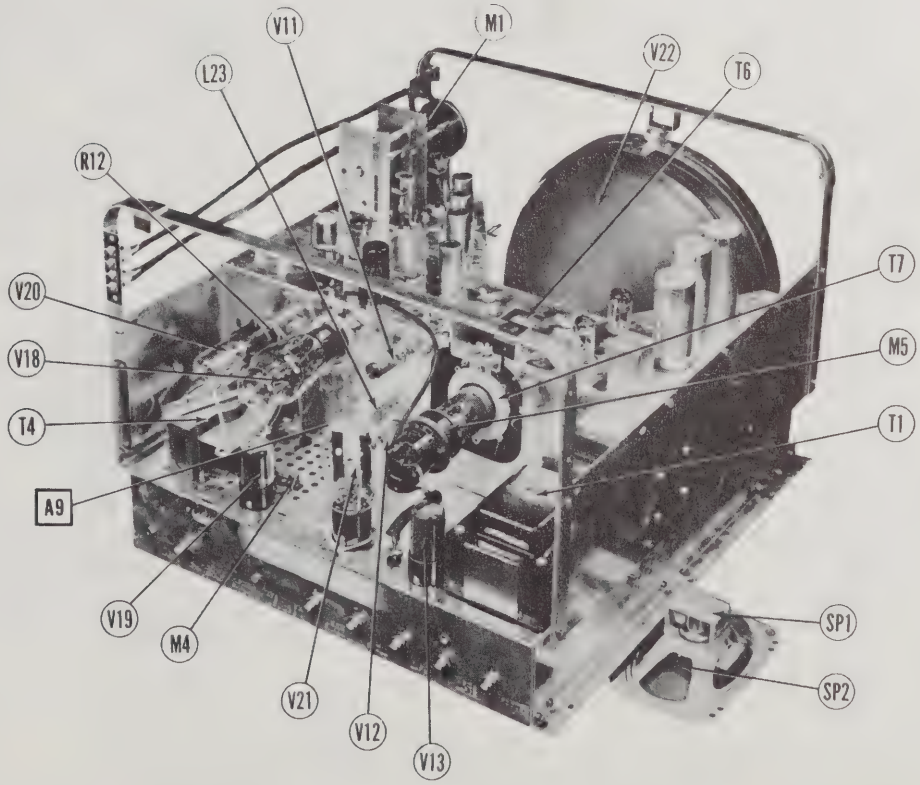


FIG 5



RF TUNER-BOTTOM VIEW



CHASSIS – TOP VIEW

VOLTAGE AND RESISTANCE MEASUREMENTS

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6AG5	-.8VDC	0V	6.3VAC	0V	240VDC	145VDC	0V		
V 2	6J6	85VDC	155VDC	6.3VAC	0V	-.8VDC	§-1.5VDC	0V		
V 3	6BH6	-.8VDC	0V	6.3VAC	0V	260VDC	205VDC	0V		
V 4	6J6	85VDC	175VDC	6.3VAC	0V	-4.2VDC	§-10VDC	0V		
V 5	6AH6	-2.3VDC	0V	6.3VAC	0V	250VDC	175VDC	.6VDC		
V 6	6BH6	-.7VDC	-.4VDC	6.3VAC	0V	260VDC	195VDC	0V		
V 7	6AH6	7.5VDC 45VDC	7.5VDC 45VDC	6.3VAC	0V	270VDC	220VDC	8VDC 47VDC		
V 8	6AL5	-.7VDC	-.2VDC	0V	6.3VAC	0V	0V	-2VDC		
V 9	6AC7	0V	6.3VAC	1.8VDC	.2VDC	1.8VDC	170VDC	0V	200VDC	
V 10	12AU7	6VDC	0V	1.4VDC	6.3VAC	6.3VAC	160VDC	0V	7.8VDC	0V
V 11	6AU6	-.5VDC	0V	6.3VAC	0V	85VDC	85VDC	0V		
V 12	6T8	-.5VDC	-.9VDC	-.6VDC	6.3VAC	0V	-.5VDC	0V	-.6VDC	57VDC
V 13	6V6GT	0V	6.3VAC	280VDC	265VDC	40VDC	7.5VDC 45VDC	0V	20VDC 57VDC	
V 14	6C4	250VDC	0V	0V	6.3VAC	250VDC	-90VDC	0V		
V 15	12AU7	370VDC	0V	6VDC 25VDC	6.3VAC	6.3VAC	370VDC	0V	6VDC 25VDC	0V
V 16	6AL5	0V	0V	0V	6.3VAC	2VDC	0V	-1VDC		
V 17	6SN7GT	-4.1VDC	115VDC	15VDC	.2VDC	280VDC	15VDC	6.3VAC	0V	
V 18	6BG6G	0V	0V	7.2VDC	112VDC	-4.3VDC	-4.3VDC	6.3VAC	250VDC	TOP CAP *
V 19	6W4GT	0V	0V	455VDC	0V	380VDC	0V	6.3VAC	0V	
V 20	1B3GT	* DO NOT MEASURE								
V 21	5U4G	0V	390VDC	0V	370VAC	0V	370VAC	0V	390VDC	
V 22	10BP4	0V	1.5VDC	PIN 10 375VDC	PIN 11 110VDC	PIN 12 6.3VAC				

§ Taken with vacuum tube voltmeter.
◓ Measured in High Band position.
♦ Measured in Low Band position.
Note: Size switch set in "Small" position for these readings.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6AG5	1.7Meg.	0Ω	.1Ω	0Ω	†3.5KΩ	†35KΩ	0Ω		
V 2	6J6	†11KΩ	†6KΩ	.1Ω	0Ω	100KΩ	2.7KΩ	0Ω		
V 3	6BH6	1.7Meg.	0Ω	.1Ω	0Ω	†3.5KΩ	†35KΩ	0Ω		
V 4	6J6	†11KΩ	†6KΩ	.1Ω	0Ω	100KΩ	10KΩ	0Ω		
V 5	6AH6	1.7Meg.	0Ω	.1Ω	0Ω	†2.5KΩ	†8KΩ	68Ω		
V 6	6BH6	1.7Meg.	82Ω	.1Ω	0Ω	†2.4KΩ	†58KΩ	0Ω		
V 7	6AH6	900Ω 170Ω	900Ω 170Ω	.1Ω	0Ω	†2.4KΩ	†24KΩ	1000Ω 300Ω		
V 8	6AL5	9.3KΩ	680KΩ	0Ω	.1Ω	10Ω	0Ω	1000Ω		
V 9	6AC7	0Ω	.1Ω	750Ω	9.3KΩ	750Ω	†17KΩ	0Ω	†27KΩ	
V 10	12AU7	47KΩ	0Ω	270KΩ	.1Ω	.1Ω	†13KΩ	1 Meg.	3.9KΩ	0Ω
V 11	6AU6	47KΩ	0Ω	.1Ω	0Ω	†20KΩ	†20KΩ	0Ω		
V 12	6T8	Inf.	44KΩ	Inf.	.1Ω	0Ω	Inf.	0Ω	10 Meg.	†470KΩ
V 13	6V6GT	0Ω	.1Ω	†1.7KΩ	†2.2KΩ	470KΩ	900Ω 170Ω	0Ω	1.2KΩ 480Ω	
V 14	6C4	†390KΩ	Inf.	0Ω	.1Ω	†390KΩ	1.2 Meg.	0Ω		
V 15	12AU7	†1000Ω	2.2Meg.	5KΩ 750Ω	.1Ω	.1Ω	†1000Ω	2.2Meg.	5KΩ 750Ω	0Ω
V 16	6AL5	33KΩ	33KΩ	0Ω	.1Ω	4.8Meg.	0Ω	4.8Meg.		
V 17	6SN7GT	130KΩ	†300KΩ	1.5KΩ	5 Meg.	†30KΩ	1.5KΩ	.1Ω	0Ω	
V 18	6BG6G	Inf.	0Ω	82Ω	†300KΩ	1 Meg.	1 Meg.	.1Ω	†8.2KΩ	TOP CAP †4KΩ
V 19	6W4GT	Inf.	Inf.	†4KΩ	Inf.	†95Ω	Inf.	.1Ω	0Ω	
V 20	1B3GT	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	TOP CAP †4KΩ
V 21	5U4G	Inf.	20KΩ	Inf.	46Ω	Inf.	48Ω	Inf.	20KΩ	
V 22	10BP4	0Ω	270KΩ	PIN 10 †1000Ω	PIN 11 70KΩ	PIN 12 .1Ω				

† Measured from pin 2 of V21
◓ Measured fin High Band position.
♦ Measured in Low Band position.
Note: Size switch set in small position for these measurements.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltage measured at 1,000 ohms.
2. Pin numbers are counted in a clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings.
5. Front panels controls set at minimum.
6. Where readings may vary according to the setting of the service controls, both minimum and maximum readings are given.

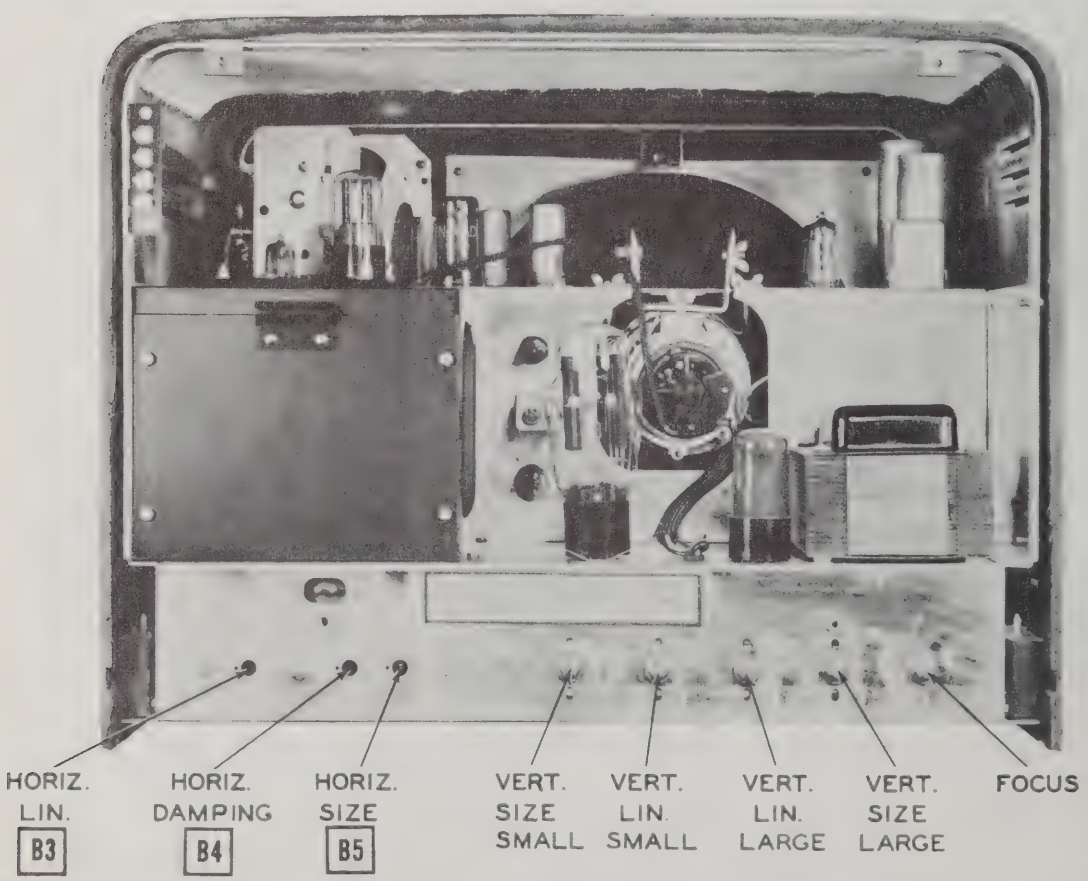
HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

1. Turn the horizontal drive trimmer (B1) (under chassis), clockwise until fully closed, then counter-clockwise 1/2 turn.
2. Turn the set on and set the contrast control to normal. Tune in a TV station, preferably a test pattern, and turn the horizontal hold control to the center of its range. Turn the vertical hold control to synchronize the picture vertically.
3. Turn the horizontal frequency adjustment B2 until the picture synchronizes horizontally. The setting of this adjustment is correct when a sudden twist of the hold control tends to throw the picture out of horizontal synchronization.
4. Turn the horizontal linearity #2, (horizontal linearity large), B3 so the screw protrudes 1/2 in., leave the adjustment in this position.
5. With the picture expander control set in "small" position, adjust the horizontal linearity #1, (horizontal damping small), B4, and the horizontal size, (horizontal size small), B5 for a picture slightly wider than the picture tube face with best linearity from right to left. If the proper width cannot be obtained, it may be necessary to readjust B1. If B1 is changed repeat steps 3, 4 and 5.
6. With the picture expander in the "large" position, no further horizontal adjustment should be necessary.

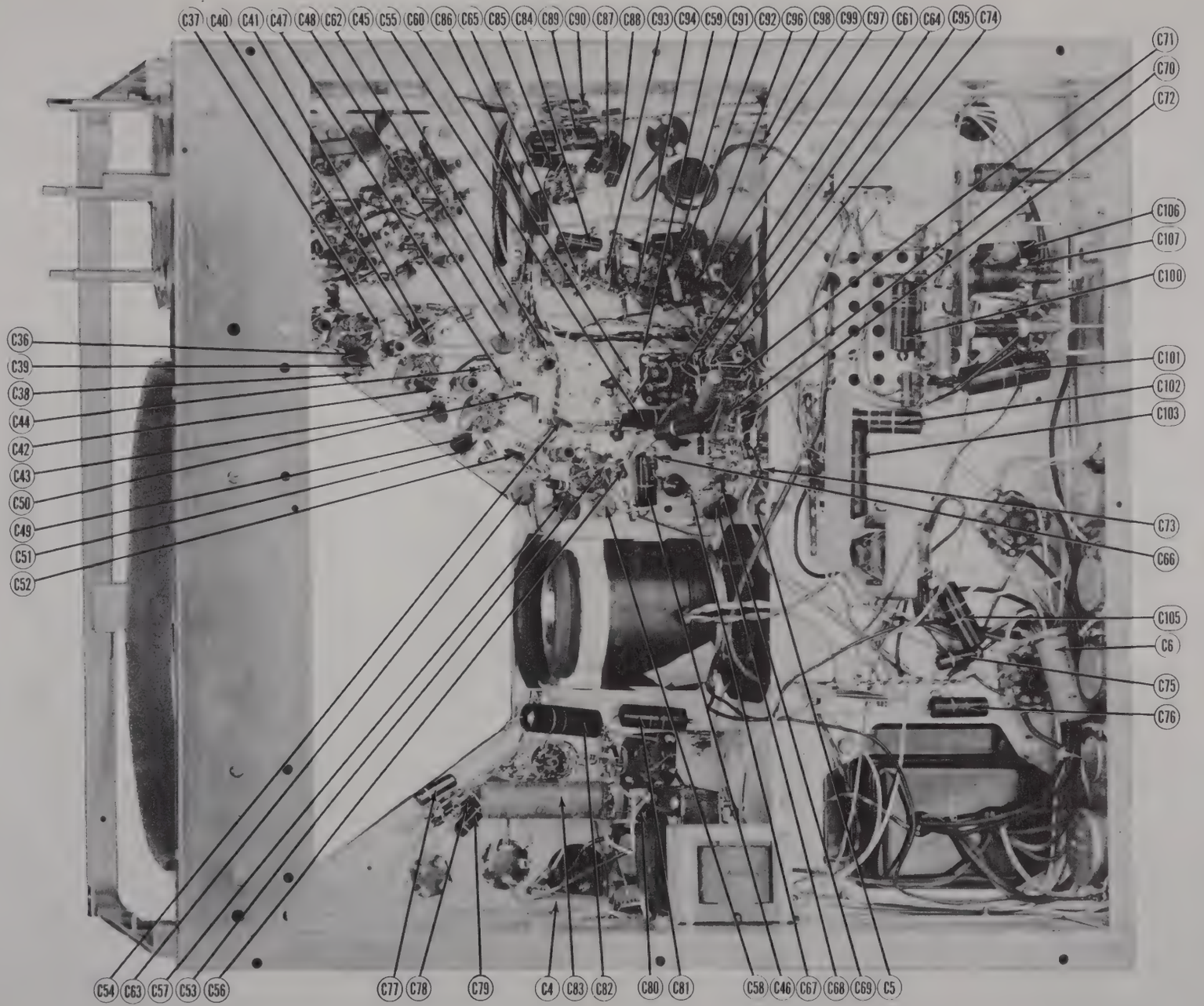
VERTICAL LINEARITY ADJUSTMENTS

The horizontal sweep circuit adjustments should be performed before beginning the vertical linearity adjustments.

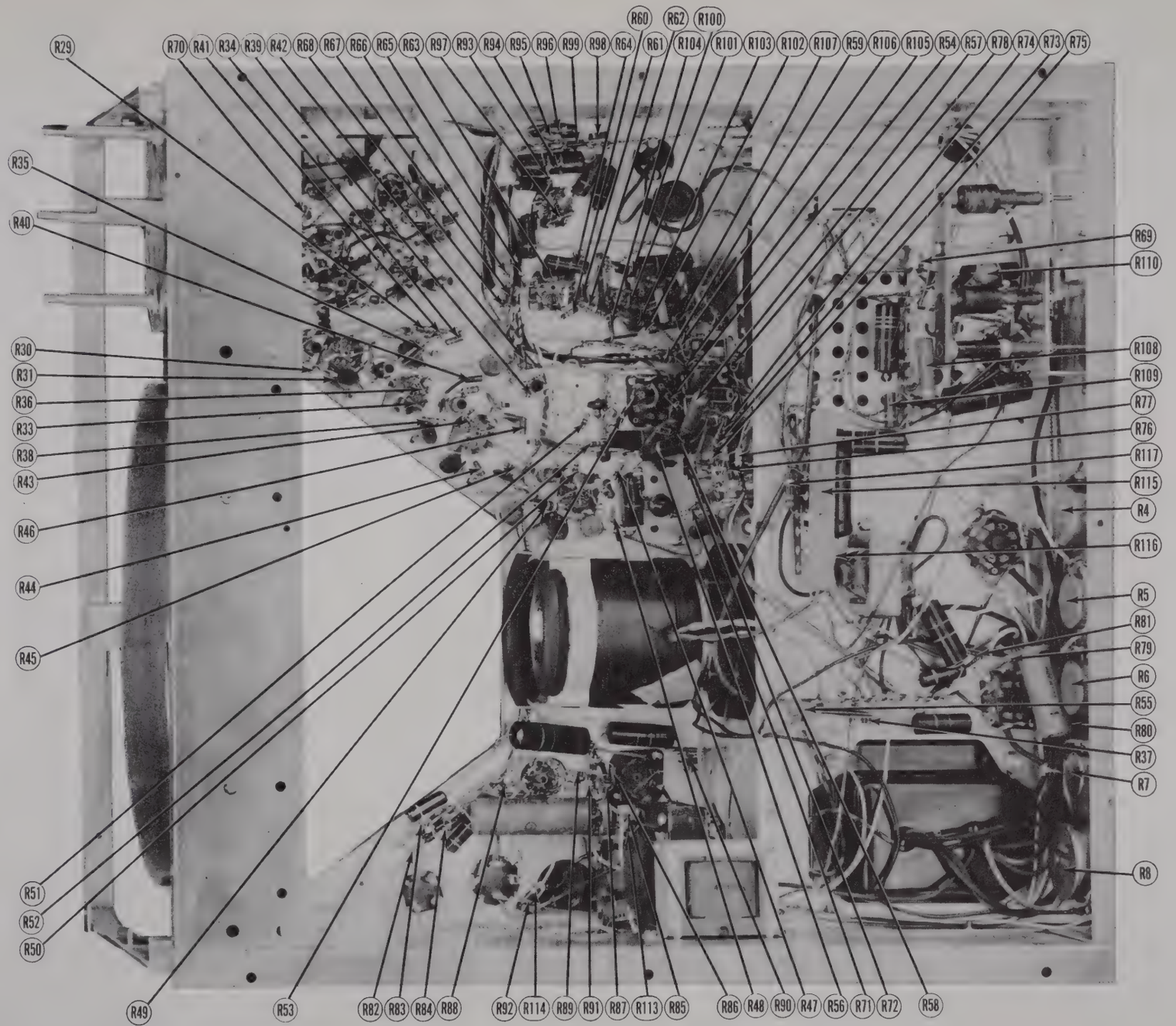
1. Tune in a test pattern from a TV station and turn the contrast control to its normal setting. Turn the vertical hold, and horizontal hold, controls to properly synchronize the picture.
2. Set the picture expander to "large".
3. Adjust the vertical size #2 (vertical size large), control until the outer circle of the test pattern almost disappears off the edge of the picture tube face.
4. Adjust the vertical linearity #2, (vertical linearity large), control for best linearity from top to bottom of the picture. The vertical size and linearity controls are interacting and should be adjusted alternately until proper size with best vertical linearity is obtained.
5. Switch the picture expander to "small".
6. Adjust the vertical size #1, (vertical size small), and the vertical linearity #1, (certical linearity small), until the picture is of proper size with best linearity from top to bottom.



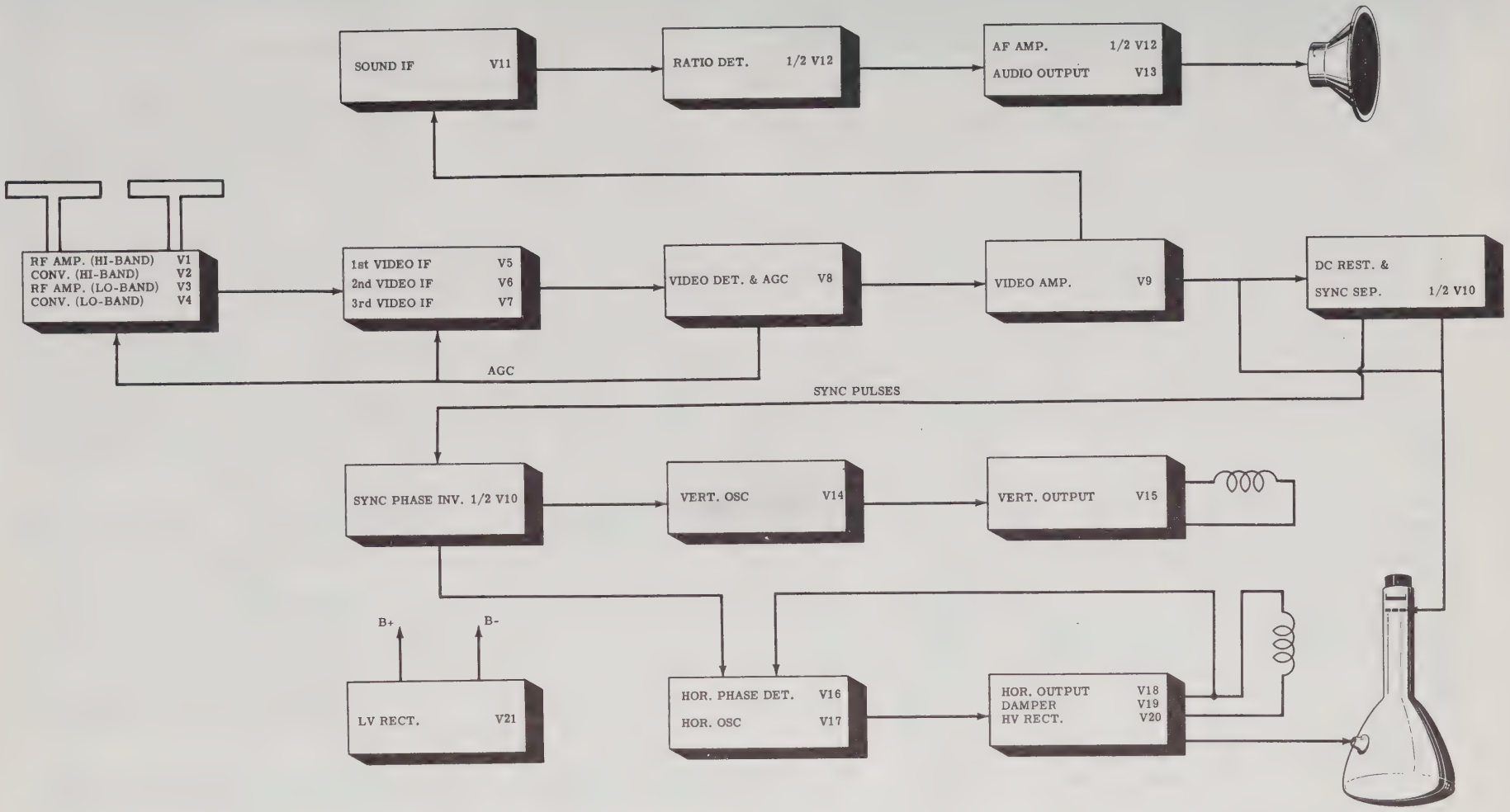
CABINET-REAR VIEW



CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION



CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION



BLOCK DIAGRAM

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: STROM.CARL. PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1	H1 Band RF Amp.	6AG5	6AG5	7BD	
V2	H1 Band Conv.	6J6	6J6	7BF	
V3	Lo Band RF Amp.	6BH6	6BH6	7CM	
V4	Lo Band Conv.	6J6	6J6	7BF	
V5	1st Video IF	6AH6	6AH6	7BK	
V6	2nd Video IF	6BH6	6BH6	7CM	
V7	3rd Video IF	6AH6	6AH6	7BK	
V8	Video Det.-AGC Rectifier	6AL5	6AL5	6BT	
V9	Video Amp.	6AC7	6AC7	8N	
V10	DC Rest.-Sync. Sep.-Sync. Phase Inverter	12AU7	12AU7	9A	
V11	Sound IF Amp.	6AU6	6AU6	7BK	
V12	Ratio Det.-AF Amp.	6T8	6T8	9E	
V13	Audio Output	6V6GT	6V6GT	7AC	
V14	Vert. Osc.	6C4	6C4	6BG	
V15	Vert. Amp.	12AU7	12AU7	9A	
V16	Hor. Phase Det.	6AL5	6AL5	6BT	
V17	Hor. Osc.	6SN7GT	6SN7GT	6BD	
V18	Hor. Output	6BG6G	6BG6G	5BT	
V19	Damper	6W4GT	6W4GT	4CG	
V20	HV Rectifier	1B3GT	1B3GT	3C	
V21	LV Rectifier	5U4G	5U4G	5T	
V22A	Picture Tube	10BP4	10BP4	12D	
B	Picture Tube	10FP4	10FP4	12D	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA: STROM. CARL. PART No.	REPLACEMENT DATA: AEROVOX PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: ERIE PART No.	REPLACEMENT DATA: SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	40	450	111058	AFH88J	UP4445		TVL-64	▲ Filter
B	40	450						■ Filter
C2A	40	450	111059	AF822J20C			D12976	▲ Filter
B	10	450						■ Decoupling
C	10	450						▲ V. Amp. Screen Bypass
D	100	100						Output Cath. Bypass
C3A	40	450	111060	AF842J20B	UP43145C*		TVL-30	▲ Filter
B	20	450			BRH501		TVA-17	■ Decoupling
C	10	450						▲ Vert. Output Dec.
D	100	50						Vert. Output Cath. Dec.
C4	100	6	111070	PRS6/100	BRH601		TVA-6	Bias Filter
C5	1	50	111063		BR145		TVA-11	Stabilizing Cap.
C6	25	25	111069	PR825/25	BR252A		TVA-6	Output Cath. Bypass
C7	220		110462			GP2K-220		RF Coupling
C8	750		110654			GP2K-750		AGC Filter
C9	5000		110586			811-005	29C1	HB RF Fil. Bypass
C10	75		110483			GP1K-75		HB RF Screen Bypass
C11	75		110483			GP1K-75		HB RF Decoupling
C12	2000		110652			GP2M-002	29C2	HB RF Plate Dec.
C13	2000		110652			GP2M-002	29C2	HB Conv. Grid Filter
C14	5000		110586			811-005	29C1	HB Conv. Fil. Bypass
C15	22		110653			GP1K-22		Osc. Grid Cap.
C16	10		110656			N750K-10		Osc. Feedback
C17	750		110654			GP2K-750		HB Osc. Plate Dec.
C18	10		110656			N750K-10		Fixed Trimmer
C19	5000		110586			811-005	29C1	Conv. Plate Dec.
C20	5000		110586			811-005	29C1	Decoupling
C21	220		110462			GP2K-220		RF Coupling
C22	750		110654			GP2K-750		LB RF Screen Bypass
C23	750		110654			GP2K-750		LB RF Decoupling
C24	2000		110652			GP2M-002	29C2	LB RF Plate Dec.
C25	0.5-5		110035			532-08-0.5 -5		Variable Trimmer
C26	0.5-5		110035			532-08-0.5 -5		Variable Trimmer
C27	4.2		110673					RF Coupling
C28	4.2		110673					RF Coupling
C29	5.5		110655					Fixed Trimmer
C30	2000		110652			GP2M-002	29C2	LB Conv. Grid Filter
C31	5000		110586			811-005	29C1	LB Conv. Fil. Bypass
C32	1.5		110428			NP0K-1.5		Osc. Coupling
C33	22		110653			GP1K-22		Osc. Grid Cap.
C34	10		110656			GP1K-10		Osc. Feedback
C35	750		110654			GP2K-750		Osc. Plate Dec.
C36	5000		110586	1467-005	1D5D5	811-005	29C1	AGC Filter
C37	5000		110586	1467-005	1D5D5	811-005	29C1	1st V. IF Fil. Bypass
C38	5000		110586	1467-005	1D5D5	811-005	29C1	1st V. IF Screen Bypass
C39	5000		110586	1467-005	1D5D5	811-005	29C1	1st V. IF Plate Dec.
C40	5000		110586	1467-005	1D5D5	811-005	29C1	AGC Filter
C41	5000		110586	1467-005	1D5D5	811-005	29C1	2nd V. IF Fil. Bypass
C42	470		110464	1468-0005	5W5T5	GP2K-470	1FM-35	2nd V. IF Screen Bypass
C43	5000		110586	1467-005	1D5D5	811-005	29C1	2nd V. IF Plate Dec.
C44	.68		110437					RF Coupling
C45	6.8		110671			NP0K-6.8		Fixed Trimmer
C46	.1	200	110661	P288-1	GT2P1		TM-1	AGC Filter
C47	5000		110586	1467-005	1D5D5	811-005	29C1	RF Bypass
C48	5000		110586	1467-005	1D5D5	811-005	29C1	RF Bypass
C49	5000		110586	1467-005	1D5D5	811-005	29C1	3rd V. IF Cath. Bypass
C50	5000		110586	1467-005	1D5D5	811-005	29C1	3rd V. IF Fil. Bypass
C51	5000		110586	1467-005	1D5D5	811-005	29C1	3rd V. IF Screen Bypass
C52	5000		110586	1467-005	1D5D5	811-005	29C1	3rd V. IF Plate Dec.
C53	100		110460	1468-0001	5W5T1	GP1K-100	1FM-31	IF Coupling
C54	5000		110586	1467-005	1D5D5	811-005	29C1	RF Bypass
C55	.1	200	110661	P288-1	GT2P1		TM-1	Bias Filter
C56	5		110598	1468-000005	5W5V5	NP0K-5	MS-55	V. Diode Filter
C57	10000		110672	P488-01	GT4S1	821-01	36C1	DAGC Decoupling
C58	5000		110586	1467-005	1D5D5	811-005	29C1	V. Det.-AGC Fil. Bypass
C59	470		110464	1468-0005	5W5T5	GP2K-470	1FM-35	Video Amp. Cath. Bypass
C60	680		110465	1468-750	1W5T7	GP2K-680	1FM-37	Video Amp. Cath. Bypass

CAPACITORS (CONT.)

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA: STROM.CARL. PART No.	REPLACEMENT DATA: AEROVOX PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: ERIE PART No.	REPLACEMENT DATA: SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C61	5000		110586	1467-005	1D5D5	811-005	29C1	V. Amp. Screen Bypass
C62	5000		110586	1467-005	1D5D5	811-005	29C1	RF Bypass
C63	5000		110586	1467-005	1D5D5	811-005	29C1	RF Bypass
C64	.1	400	110546	P488-1	GT4P1		TM-1	Video Coupling
C65	22		110653	1468-000025	5W5Q25	GP1K-22	MB-425	DC Res. Plate Bypass
C66	2.5		110484					S. IF Coupling
C67	39		110665	1468-00004	5W5Q4	GP1K-39	1FM-44	S. IF Coupling
C68	.022	400	110542	P488-022	GT4S2		TM-12	S. IF Decoupling
C69	330		110454	1468-0003	5W5T3	GP2K-330	1FM-335	Diode Load Cap.
C70	.0047	400	110537	P688-0047	GT6D5	GP2M-0047	TM-25	De-emphasis *
C71	.047	200	110660	P288-047	GT2S5		TM-15	Audio Coupling
C72	.0047	400	110538	P688-0047	GT6D5	GP2M-0047	TM-25	Audio Coupling
C73	100		110451	1468-0001	5W5T1	GP1K-100	1FM-31	AF Plate Bypass
C74	.1	400	110546	P488-1	GT4P1		TM-1	AF Plate Decoupling
C75	.01	400	110540	P488-01	GT4S1	GP2-335-01	TM-11	Audio Coupling
C76	.022	600	110557	P688-022	GT6S2		TM-12	Output Plate Bypass
C77	.0022	400	110536	P688-0022	GT6D2	GP2M-0022	TM-22	Integrator Net.
C78	.0047	400	110538	P688-0047	GT6D5	GP2M-0047	TM-25	Integrator Net.
C79	.0047	400	110538	P688-0047	GT6D5	GP2M-0047	TM-25	Integrator Net.
C80	.0047	400	110538	P688-0047	GT6D5	GP2M-0047	TM-25	Vert. Osc. Grid
C81	.1	400	110546	P488-1	GT4P1		TM-1	Vert. Discharge
C82	.22	400	110548	P488-22	GT4P25		TC-2	Vert. Sweep Coupling
C83	.25	600	110428	684-25	GT6P25		TC-2	Decoupling
C84	.01	400	110540	P488-01	GT4S1	GP2-335-01	TM-11	Sync. Coupling
C85	.001	400	110534	P688-001	GT6D1	GP2L-001	TM-21	Sync. Coupling
C86	.001	400	110534	P688-001	GT6D1	GP2L-001	TM-21	Sync. Coupling
C87	.01	400	110540	P488-01	GT4S1	GP2-335-01	TM-11	Hor. Sweep Coupling
C88	.01	400	110540	P488-01	GT4S1	GP2-335-01	TM-11	AFC Filter
C89	.1	400	110546	P488-1	GT4P1		TM-1	Hor. Feedback
C90	.0047	400	110538	P688-0047	GT6D5	GP2M-0047	TM-25	AFC Filter
C91	.047	400	110544	P488-047	GT4S5		TM-15	AFC Filter
C92	330	500	110234			GP2K-330		Hor. MV Feedback
C93	3900	500	110272					Fixed Trimmer
C94	400	500	110216	1468-0004	5W5T4	GP2K-390	1FM-34	Hor. Discharge
C95	270	500	110208	1468-00025	5W5T25	GP2K-270	1FM-325	Hor. Sweep Coupling
C96	.047	400	110544	P488-047	GT4S5		TM-15	Hor. Output Screen Bypass
C97	.22	400	110548	P488-22	GT4P25		TC-2	Hor. Output Cath. Bypass
C98	36		110664					Hor. Feedback
C99	36		110664					Hor. Feedback
C100	.033	600	110558	P688-033				Damper Filter
C101	.1	600	110561	P688-1	GT6P1		TM-1	Damper Filter
C102	.062	400	110674	P488-068	GT4S5		TM-16	Hor. Sweep Coupling
C103	.22	400	110548	P488-22	GT4P25		TC-2	Hor. Sweep Coupling
C104	.0005	10000	110658	10034-0005		410-500	TVM-351	HV Filter
C105	.1	400	110451	P488-1	GT4P1		TM-1	Pic. Tube Cath. Dec.
C106	.01	1000	110568	P1088-01	GT1S1		MB-11	Line Filter
C107	.01	1000	110568	P1088-01	GT1S1		MB-11	Line Filter

* Some models use .0033 MFD in this application.
† Some models use .01MFD in this application.
‡ Omit bypass section.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA: STROM.CARL. PART No.	REPLACEMENT DATA: IRC PART No.	REPLACEMENT DATA: CLAROSTAT PART No.	INSTALLATION NOTES
R1A	1 Meg.	‡	145086	B11-137 *	145086	Vert. hold-rear (Dual Concentric)
B	50KΩ	‡		B11-123 *		Horiz. hold-front
C	Shaft End			E202 *		Attach per instructions in "Concentrikit".
R2	100KΩ	‡	145076			Brightness control and range switch
R3A	250KΩ	‡	145085		145085	Volume control and switch (Dual Concentric)
B	750Ω	‡				Contrast control
R4	100Ω	2	145082	W-100	43-100	Vert. size #1 control (Wire Wound)
R5	5000Ω	‡	145079	Q11-114	M-19-S	Vert. linearity #1 control
R6	5000Ω	‡	145079	Q11-114	M-19-S	Vert. linearity #2 control
R7	2.5Meg.	‡	145080	Q11-239	M-84-S	Vert. size #2 control
R8	10KΩ	4	145081		10-10K	Focus control, (Wire Wound)

* Additional parts to be used with "Concentrikit".

RESISTORS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA: STROMBERG-CARLSON PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES ALL RESISTORS ARE ± 20% UNLESS OTHERWISE STATED
R9	2200Ω	‡	149103	BTS-2200	High Band RF Grid
R10	33KΩ	‡	149110		High Band RF Screen
R11	1000Ω	‡	149101	BTS-1000	High Band RF Plate Decoupling
R12	1000Ω	‡	149101	BTS-1000	High Band Conv. Grid
R13	150Ω	‡	149096		Decoupling
R14	2700Ω 10%	‡	28163		High Band Osc. Grid
R15	47000Ω	‡	149105		High Band Osc. Plate Decoupling
R16	10KΩ	‡	149107	BTS-10K	1st IF Transformer Shunt
R17	150Ω	‡	149096		Decoupling
R18	560Ω 10%	‡	28155	BTS-560	Low Band RF Grid
R19	1000Ω	‡	149101	BTS-1000	AGC Network
R20	33KΩ	‡	149110		Low Band RF Screen
R21	1000Ω	‡	149101	BTS-1000	Low Band RF Plate Decoupling
R22	150Ω	‡	149096		Decoupling
R23	10KΩ	‡	149107	BTS-10K	Low Band Conv. Grid
R24	1000Ω	‡	149101	BTS-1000	Low Band Conv. Grid
R25	100KΩ	‡	149113	BTS-100K	Series Test Point
R26	10KΩ 10%	‡	149107		Low Band Osc. Grid
R27	47000Ω	‡	149105		Low Band Osc. Plate
R28	150Ω	‡	149096		Decoupling
R29	330Ω	‡	149098		AGC Network
R30	10KΩ 10%	‡	28170	BTS-10K	1st Video IF Transformer Shunt
R31	68Ω	‡	149094		1st Video IF Cathode
R32	33KΩ	‡	149110		1st Video IF Screen See Note 1
R33	100Ω	‡	149095		1st Video IF Plate Decoupling
R34	330Ω	‡	149098		AGC Network
R35	10KΩ 10%	‡	28170	BTS-10K	2nd Video IF Transformer Shunt
R36	82Ω 10%	‡	28145		2nd Video IF Cathode

RESISTORS (CONT.)

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA: STROM.CARL. PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES
R37	1000Ω	‡	149101	BTS-1000	Decoupling
R38	56KΩ 10%	‡			2nd Video IF Screen See Note 1
R39	220KΩ	‡	149115	BTS-220K	Trap Coil Shunt
R40	100Ω	‡	149095		2nd Video IF Decoupling
R41	330Ω	‡	149098		AGC Network
R42	100Ω	‡	149095		Decoupling
R43	8200Ω 10%	‡	28169	BTS-8200	3rd Video IF Transformer Shunt
R44	150Ω	‡	149096		3rd Video IF Cathode
R45	22KΩ	‡	149109	BTS-22K	3rd Video IF Screen
R46	100Ω	‡	149095		3rd Video IF Decoupling
R47	1 Meg.	‡	149119	BTS-1 Meg.	AGC Network
R48	680KΩ	‡	149118	BTS-680K	AGC Diode Load
R49	39KΩ 10%	1	149189	BTA-39K	Voltage Divider
R50	22KΩ 10%	‡	27407	BTS-22K	4th Video IF Transformer Shunt
R51	8200Ω 10%	‡	28169	BTS-8200	Video Det. Diode Load
R52	1000Ω	‡	149101	BTS-1000	Bias Network
R53	120Ω 10%	‡	28147		Parasitic Supp.
R54	10KΩ	‡	149107	BTS-10K	Video Amp. Screen
R55	7000Ω	8	149326	AB-7000	Video Amp. Screen Decoupling Wire Wound
R56	12KΩ 10%	2	149055	BT-2-12K	Video Amp. Plate
R57	15KΩ	2	149083	BT-2-15K	Video Amp. Plate
R58	56000Ω 10%	1	149184	BTA-5600	Voltage Divider
R59	22000Ω	‡	149103	BTS-2200	Picture Tube Grid
R60	270KΩ 10%	‡	28184	BTS-270K	DC Rest. Load
R61	47KΩ	‡	149111	BTS-47K	Voltage Divider
R62	1.8 Meg.10%	‡	28194	BTS-1.8 Meg.	Sync. Sep. Plate
R63	1 Meg.	‡	149119	BTS-1 Meg.	Sync. Phase Inv. Grid
R64	3900Ω 10%	‡	28165	BTS-3900	Sync. Phase Inv. Cathode
R65	3900Ω 10%	‡	28165	BTS-3900	Sync. Phase Inv. Plate
R66	3900Ω 10%	‡	28165	BTS-3900	Sync. Phase Inv. Plate
R67	100Ω	‡	149095	BW-½-100	Decoupling
R68	1000Ω	‡	149101	BTS-1000	Acc. Anode Decoupling
R69	220KΩ	‡	140115	BTS-220K	Voltage Divider
R70	10KΩ	‡	149107	BTS-10K	Voltage Divider
R71	47KΩ	‡	149111		1st Sound IF Grid
R72	15KΩ	‡	149108		1st Sound IF Decoupling
R73	18KΩ 10%	‡	28173	BTS-18K	De-emphasis
R74	22KΩ 10%	‡	27407	BTS-22K	Ratio Det. Diode Load
R75	22KΩ 10%	‡	27407	BTS-22K	Ratio Det. Diode Load
R76	10 Meg.	‡	149125	BTS-10 Meg.	AF Grid
R77	470KΩ	‡	149117	BTS-470K	AF Plate
R78	47KΩ	‡	149111	BTS-47K	AF Plate Decoupling
R79	470KΩ	‡	149117	BTS-470K	Output Grid
R80	270Ω 10%	1	149170	BW-1-270	Output Cathode (Wire Wound)
R81	220Ω	‡	149097	BTS-220	Focus Coil Shunt
R82	22KΩ	‡	149109	BTS-22K	Integrator
R83	8200Ω 10%	‡	28169	BTS-8200	Integrator
R84	8200Ω 10%	‡	28169	BTS-8200	Integrator
R85	1 Meg.	‡	149119	BTS-1 Meg.	Vert. Osc. Grid
R86	6.8 Meg.	‡	149124	BTS-6.8 Meg.	Voltage Divider
R87	100KΩ	‡	149113	BTS-100K	Voltage Divider
R88	820Ω 10%	‡	28157	BTS-820	Vert. Output Cathode
R89	2.2 Meg.	‡	149121	BTS-2.2 Meg.	Vert. Output Grid
R90	330Ω	‡	149104	BTS-330	Vert. Peaking
R91	390KΩ 10%	‡	28186	BTS-390K	Voltage Divider
R92	470Ω	‡	149099	BTS-470	Vert. Output Decoupling
R93	100KΩ 10%	‡	28006	BTS-100K	Horiz. Phase Det. Load
R94	100KΩ 10%	‡	28006	BTS-100K	Horiz. Phase Det. Load
R95	4.7 Meg.	‡	149123	BTS-4.7 Meg.	Horiz. Phase Det. Load
R96	470KΩ	‡	149117	BTS-470K	Horiz. AFC Filter Network
R97	33KΩ 10%	‡	149110	BTS-33K	Feedback Network
R98	4700Ω	‡	149105	BTS-4700	Feedback Network
R99	2200Ω	‡	149103	BTS-2200	Feedback Network
R100	56000Ω 10%	1	149184	BTA-5600	Horiz. Osc. Plate
R101	1500Ω	‡	149102	BTS-1500	Horiz. Osc. Cathode
R102	100KΩ	‡	149113	BTS-100K	Horiz. Osc. Grid
R103	270KΩ 10%	‡	28184	BTS-270K	Horiz. Osc. Plate
R104	22KΩ	‡	149109	BTS-22K	Filter
R105	68Ω	‡	149094		Parasitic Supp.
R106	1 Meg.	‡	149119	BTS-1 Meg.	Horiz. Output Grid
R107	82Ω 10%	1	149166	BW-1-82	Horiz. Output Cathode
R108	8200Ω 10%	2	149054	BT-2-8200	Horiz. Output Screen
R109	15KΩ	1	149145	BTA-15K	Horiz. Size Coil Shunt
R110	4000Ω	10	149325	AB-4000	Damper Filter (Wire Wound)
R111	5.6Ω 10%	1			HV Rect. Filament (Wire Wound) See Note 2
R112	1 Meg.	‡	149119		HV Filter
R113	100Ω	‡	149095	BW-½-100	Bias Network
R114	15Ω 10%	1	149158	BW-1-15	Bias Network
R115	1200Ω	15	149329	DC-1200	Filter (Wire Wound)
R116	680Ω 10%	2	149042	BW-2-680	Filter
R117	330Ω 10%	1	149171	BW-1-330	Filter
R118	2200Ω	‡	149103	BTS-2200	Band Pass Coil Shunt

Note 1. Not used in all models.
Note 2. Some models use 3.3Ω resistor in this application.

SPEAKER

ITEM No.	RATINGS FIELD RES.	RATINGS V. C. IMP.	REPLACEMENT DATA: STROMBERG-CARLSON PART No.	REPLACEMENT DATA: JENSEN PART No.	REPLACEMENT DATA: QUAM PART No.	NOTES
SP1	PM	3.1Ω			46A1	
	CONE DIA.	V. C. DIA.				
SP2	3 7/8" x 6"	9/16"				

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	STROMBERG-CARLSON PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1	117VAC @ 1.8A	730VCT .220ADC	5VAC @ 3A	6.3VAC @ 8.5A	161419	P-6315	P-3059	TP-395 #

Add series resistor to reduce plate voltage.

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING		REPLACEMENT DATA				NOTES
	DC RESISTANCE PRI.	DC RESISTANCE SEC.	STROM. CARL. PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
T2	100Ω		114069				Hor.Osc. Coil
T3	165Ω	1400Ω	114658	A-8121 §	A-4000 §	TBO-2	Vert.Block Osc.Trans.
T4	330Ω	SEC. 1	161016	A-8117		TFB-1	Hor.Output Trans.
	Tap @ 177Ω	10.6Ω					
		Tap @ .6Ω					
		SEC. 2 0Ω					
T5	540Ω	6.8Ω	161242	A-8116	A-3035 ▲	TSO-4	Vert.Output Trans.
T6A	13.5Ω		114659	DY-1			Hor.Deflection Coil
B	62Ω						Vert.Deflection Coil
T7	1000Ω		114660				Focus Coil

§ Drill one new mounting hole.
▲ Drill new mounting holes.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE PRI.	IMPEDANCE SEC.	DC RES. PRI.	DC RES. SEC.	STROMBERG-CARLSON PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
T8	7000Ω	3.1Ω	520Ω	.6Ω	161244	A-3878	A-2930	RO-13	

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA				INSTALLATION NOTES
	TOTAL DIRECT CURRENT	D.C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ∿)	STROMBERG-CARLSON PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
L1	.145A	82Ω	2.5Henries	161014	C-2304	C-2974	TR-4200	

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA STROMBERG-CARLSON PART No.	REPLACEMENT DATA MEISSNER PART No.	NOTES
L2A	Ant. Trans.	0Ω		114647		Hi-Band Primary
B	Ant. Trans.	0Ω		114646		Hi-Band Secondary
L3	Ant. Trans.	0Ω		114057		Lo-Band
L4	RF Plate	0Ω		114066		Hi-Band
L5	Mixer Grid	0Ω		114066		Hi-Band
L6	Osc. Coil	0Ω		114066		Hi-Band
L7	RF Plate	0Ω		114065		Lo-Band
L8	Band Pass	0Ω		114642		Lo-Band
L9	Mixer Grid	0Ω		114065		Lo-Band
L10	Osc. Coil	0Ω		114065		Lo-Band
L11	Mixer Plate	.1Ω		114061		
L12	RF Choke	0Ω		114060		
L13	1st Video IF	1Ω		114377		
L14	2nd Video IF	1Ω	1Ω	114376		
L15	21.9MC Trap	1.2Ω		114665		
L16	3rd Video IF	1Ω	1Ω	114382		
L17	4th Video IF	1Ω	1Ω	114376		
L18	Peaking	8Ω		114657		
L19	Peaking	20Ω		114654		
L20	Peaking	9Ω		114656		Wound on 22KΩ resistor
L21	Peaking	12.5Ω		114655		
L22	Sound IF	5.5Ω		114374		
L23	Ratio Det. Trans.	5Ω	.9Ω	114375		
L24	Hor. Linearity #1	65Ω		114075		
L25	Hor. Linearity #2	67Ω		114071		
L26	Hor. Size	2.8Ω		114074		

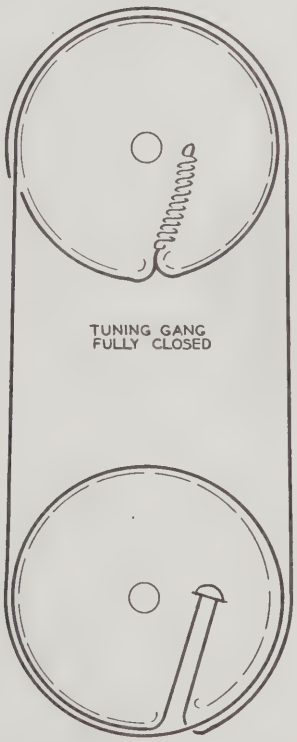
MISCELLANEOUS

ITEM No.	PART NAME	STROM. CARL. PART No.	NOTES
M1	RF Tuner		
M2	Ant. Switch		
M3	Size Switch		
M4	Fuse		.25 Amp.
M5	Ion Trap		

DISASSEMBLY INSTRUCTIONS

1. Remove four screws holding rear cover. Remove cover.
2. Remove six screws from bottom sides.
3. Slide cabinet to rear and remove.
4. Remove screw located bottom rear center. Slide bottom fiber cover to rear and remove.
5. Loosen allen head set screws on tuning knob shaft. Remove tuning knob.
6. Remove three push-on type control knobs.
7. Remove four screws located on bottom front.
8. Remove speaker plug from chassis.
9. Remove two screws located near top corners of front panel. Remove panel.

DIAL CORD STRINGING



ZENITH
MODELS S14004, S14007

TOP VIEW

ZENITH
MODELS S14004, S14007

GENERAL INFORMATION

This changer is designed to play 12 ten-inch or 10 twelve-inch records automatically. The last record is repeated until the changer is turned off. Odd-size and warped records must be played manually. The change cycle is initiated by a solenoid trip.

The cobra radionic pickup used with this changer, instead of generating power, controls power supplied by the oscillator section of the 7F7 phono pre-amp. A coil located in the pickup cartridge is part of the tuned circuit of this oscillator. A stainless-steel vane, part of the stylus assembly, moves in front of this coil in response to the modulation on the record, and varies the Q of the coil. This, in turn, causes changes in the amplitude of oscillation. These changes are detected and amplified in the pre-amp. and passed on to the audio amplifier.

The oscillator frequency used is approximately 2.5 mc.

Manufactured by **ZENITH RADIO CORPORATION**
6001 Dickens Avenue • Chicago, Illinois

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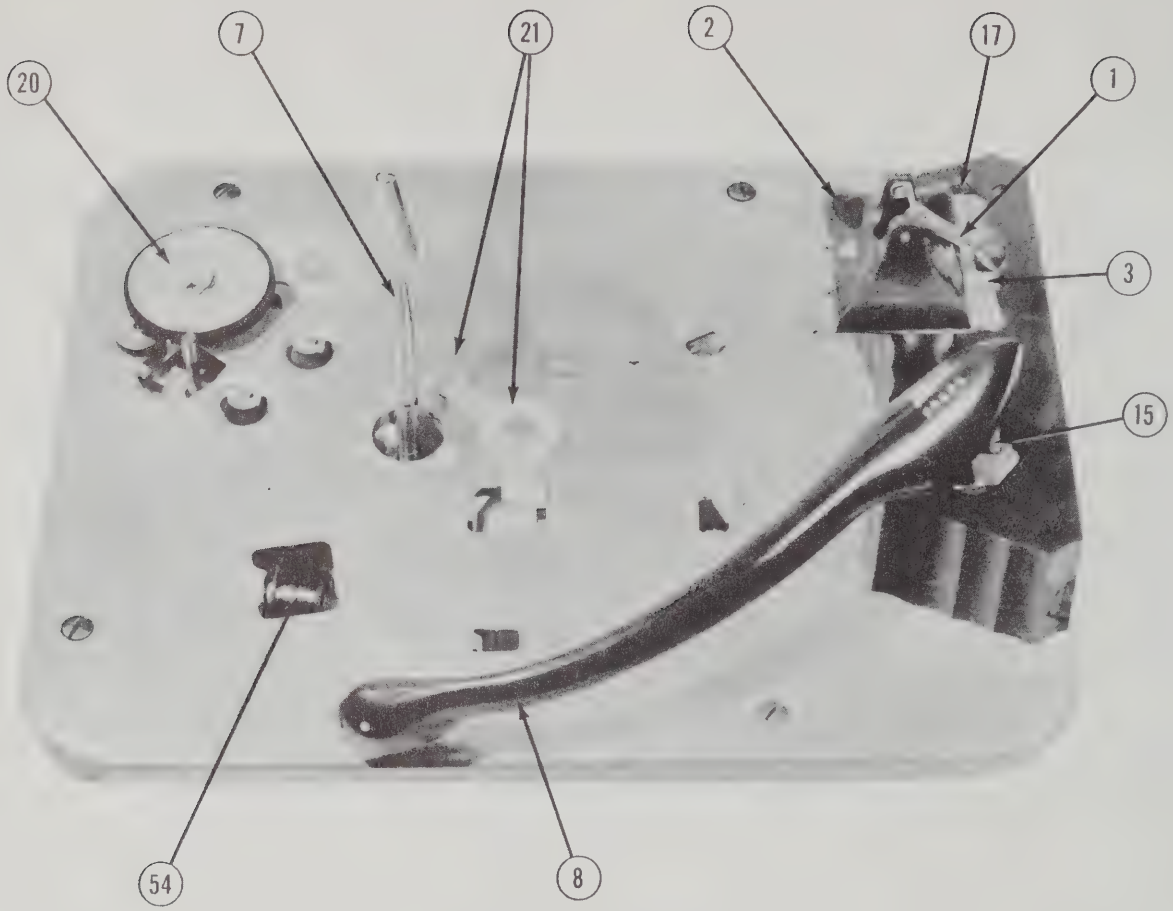
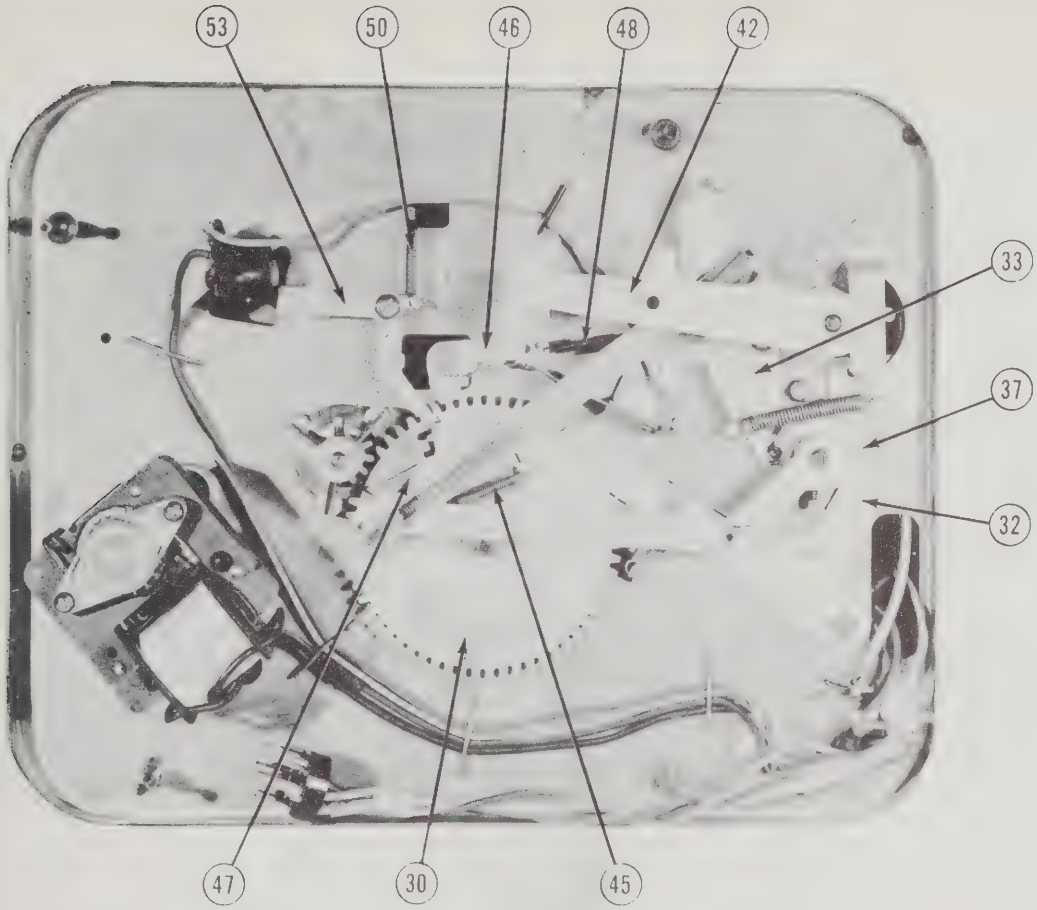


TOP VIEW LESS TURNTABLE

THE CHANGE CYCLE

Closing the contacts of the trip switch (36) allows current to flow through the solenoid. The magnetic field of the energized solenoid attracts the trip pawl (53) which releases the gear pawl tooth (47) and allows it to engage the rotating turntable gear. This action starts the clutch gear (30) to turn. A stud on the clutch gear (30) engages the tone arm lift lever (32) which, in turn, engages the tone arm stud (15) and raises the tone arm. The tone arm lift lever (32) also applies the tone arm brake (38), which prevents coasting and erratic landing of the needle. The clutch gear (30) moves the tone arm actuating lever (42) and laterally swings the tone arm off the turntable. During the lateral swing of the tone arm, the record ejector link and arm assembly (58) operates the record ejector plate (3), and when the tone arm moves to its maximum outward position, the record ejector plate (3) ejects the record and allows it to drop to the turntable. The clutch gear (30) then moves the tone arm actuating lever (42), which swings the tone arm over the starting groove of the record. The tone arm swings one inch nearer the spindle with ten-inch records than it does with twelve-inch records. This difference in inward swing is controlled by the discriminator lever assembly (33). When the record size selector shelf is turned to the 10 or 12-inch position, its shaft (4) moves the discriminator cam (37) and sets the discriminator lever assembly (33) for the correct inward swing of the tone arm. After the tone arm swings over the starting groove of the record, the tone arm lift lever (32) lowers it and releases the brake (38). As the clutch gear (30) completes the revolution, the gear pawl tooth (47) hits the trip pawl (53) and the action removes the gear pawl tooth from the path of the turntable gear, causing the clutch gear (30) to stop and complete the cycle.

The velocity trip depends on the ratio of oscillations of the trip switch contact to the rate of movement of the tone arm. As the record is played, the



BOTTOM VIEW

tone arm lever (42) moves slowly inward. The oscillating lever (46) comes in contact with the ratchet on the tone arm lever and then moves out before the ratchet can drag the oscillating lever and close the trip switch (36) contacts. When the record is completed and the needle enters the oscillating groove, the inward speed of the tone arm increases.

This makes it impossible for the oscillating lever (46) to move out of the ratchet in time and, as a result, it is dragged inward, closing the trip switch contacts and starting the next cycle.

RECORD CHANGER MOUNTING CLIPS

This record changer uses new type pivot clips to mount the changer in the cabinet. The changer is released by applying an upward pressure to the slotted ends of the clips until the clips pivot to a vertical position. When the changer is installed, the clips are pivoted back to the horizontal, or holding, position.

ADJUSTMENTS

Set-Down Point

The tone arm set-down point may be adjusted by means of the set-down adjustment screw (12). Clockwise rotation of the screw moves the tone arm in, while counterclockwise rotation moves it out.

Tone Arm Height

The tone arm height adjustment determines the vertical rise of the tone arm. If the tone arm does not raise sufficiently, the record changer will not play a full load of 12-inch records. If, on the other hand, the tone arm is raised too high, it may hit the records on the record shelf. Set the tone arm height adjustment screw (13) so that the needle clears 12 unwarped ten-inch records on the turntable. The tone arm housing must not hit the underside of the records on the record shelf when the changer is cycled after adjustment.

Trip Switch

The tone arm lever (42) must be moved so that

A PHOTOFACT "EXPLODED" VIEW

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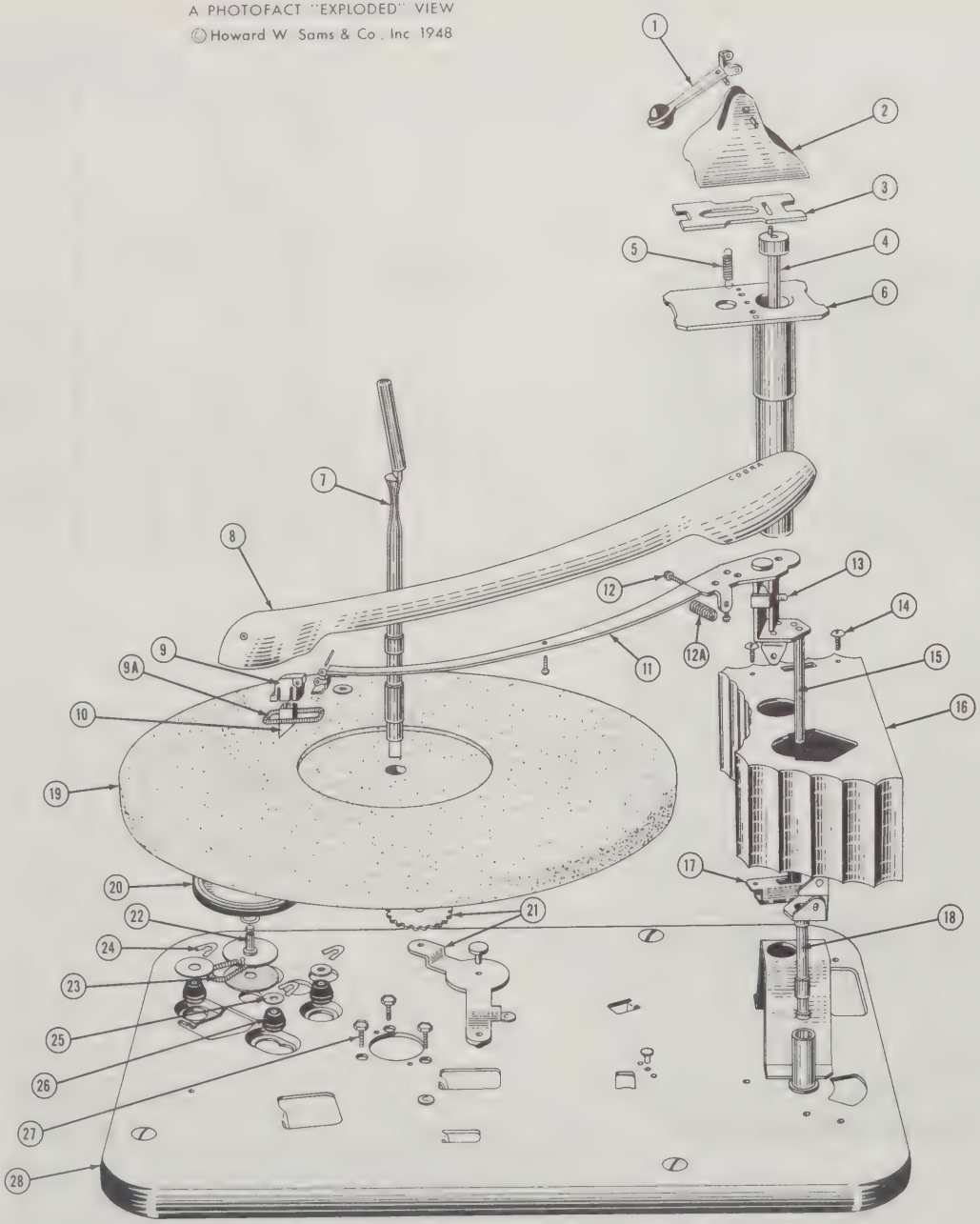

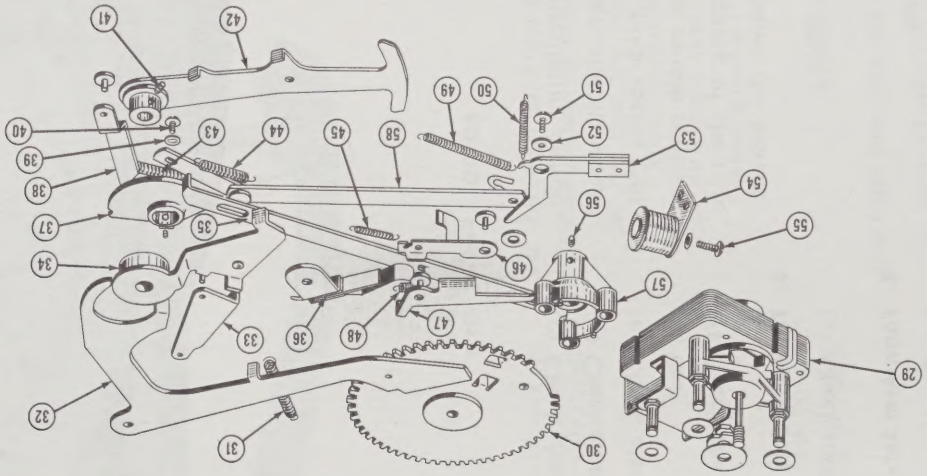
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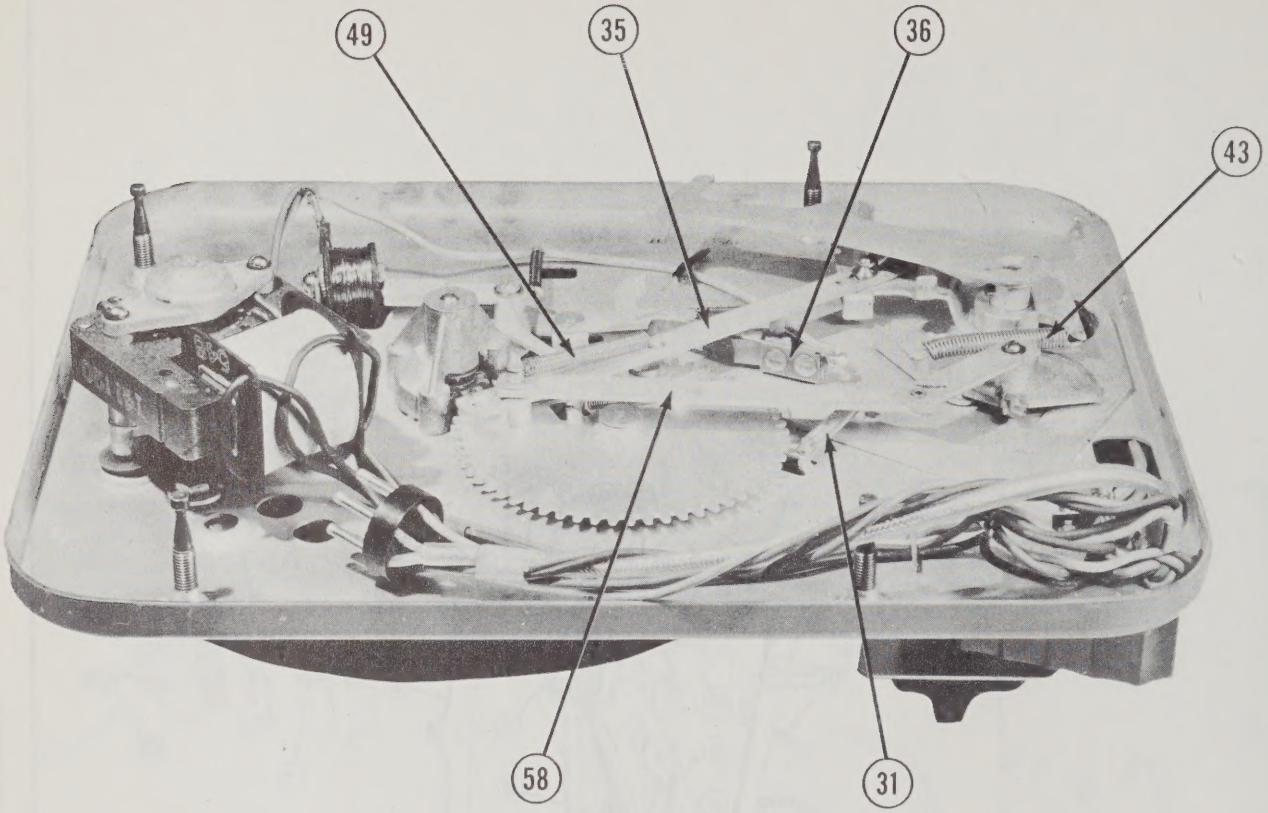


BOTTOM FRONT VIEW

its ratchet does not engage the oscillating switch lever. With a pair of long-nose pliers, simultaneously bend the stationary contact and guide spring (36) until the spacing between the trip switch contacts is 1/16" to 3/32". The contact spring of the trip switch (36) must always rest against the heavier guide spring after adjustment.

TROUBLES

1. ***Turntable Fails to Revolve When Changer Is Turned On***
   (a) Check power supply to motor.
   (b) Check for oil or grease on idler wheel tire.
   (c) Check for binding in idler wheel bearing.
   (d) Check tension of idler wheel spring (23).
   (e) Check for binding in turntable bearing and gear drive assembly.

2. ***Changer Fails to Cycle***
   (a) See that the "Auto.-Man.-Off" switch is set to Auto. position.
   (b) Check trip pawl (53) for binding.
   (c) Check gear pawl tooth (47) for binding.
   (d) Check clutch gear assembly (30) for binding.
   (e) Check electrical continuity of solenoid circuit.
   (f) Check the solenoid energizing voltage.

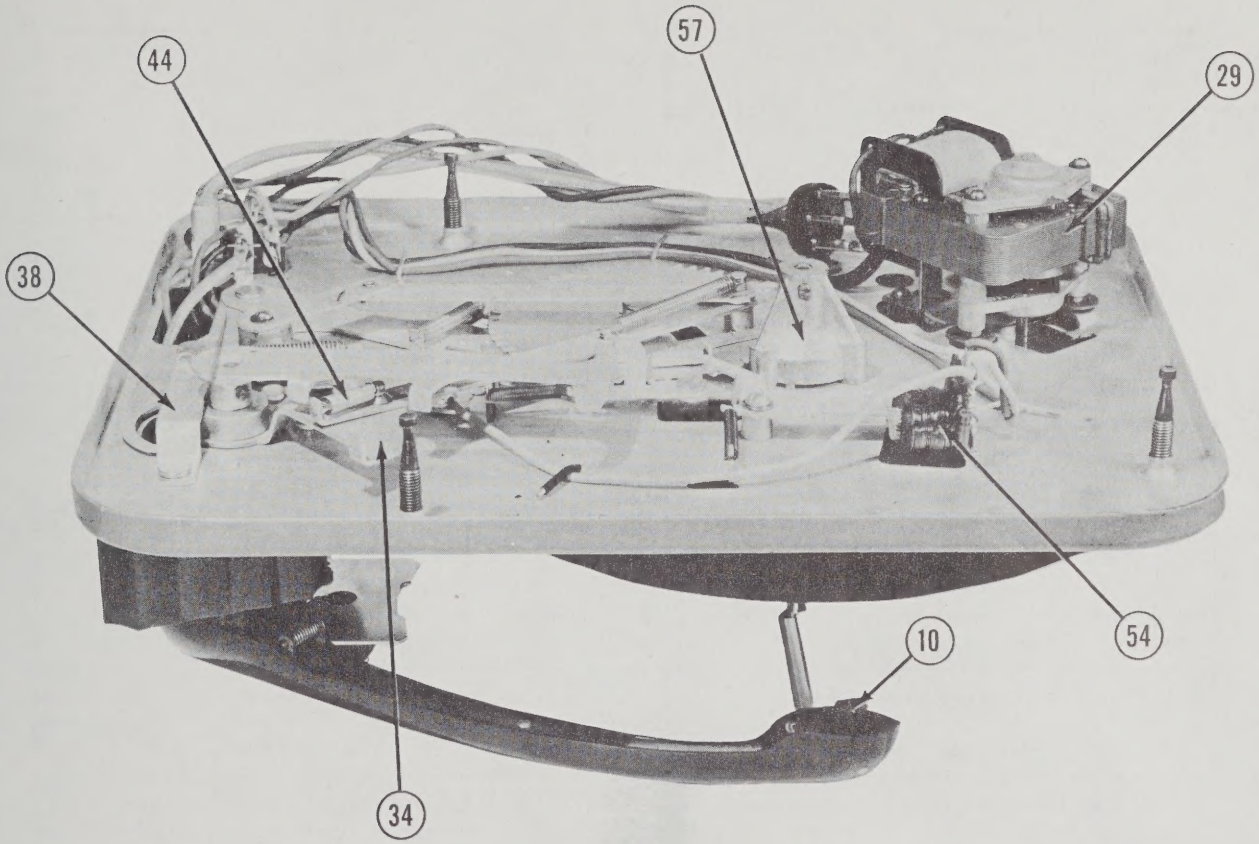
3. ***Tone Arm Sets Down Too Far In or Out on Record***
   (a) Check tone arm set-down adjustment.

4. ***Tone Arm Set-Down Position Varies***
   (a) Check tone arm brake (38) and spring (43).
   (b) Tone arm pivots loosely.

5. ***Needle Fails to Clear Maximum Load of Records on the Turntable***
   (a) Check tone arm height adjustment.

6. ***Mechanism Jams***
   (a) Burr or sharp point on the gear pawl tooth (47). Smooth out with a small file.

7. ***Squeaks or Noises During Playing of Records***
   (a) Friction between the records on the turn-



BOTTOM BACK VIEW

table and the spindle. A thin coat of wax applied to the spindle will remedy this condition.

(b) Check lubrication.

8. ***Record Is Not Heard Although Changer Operates***

(a) See that the Phono-Radio switch is in Phono.

(b) Check receiver audio by listening to radio.

(c) Check the phono oscillator tube.

(d) Check needle cartridge.

(e) Check tone arm housing for broken leads.

9. ***Rumble and Microphonics During Reproduction***

(a) Changer not "floated" properly. Remove packing strip. Loosen mounting bolts.

(b) Motor retaining rings rubbing on the idler wheel.

(c) Motor leads pulled too tight, preventing motor from "floating" freely.

(d) Noisy phono oscillator tube.

(e) Impression on idler wheel.

10. ***Changer Will Not Cycle Upon Completion of Record***

(a) See that the "Auto.-Man.-Off" switch is in "Auto." position.

(b) Be certain that the record has an eccentric center groove.

LUBRICATION

Use Light Machine Oil on the Following Points

1. Idler wheel (20) bearing.
2. Upper and lower motor (29) bearings.

Use Lubriplate on the Following Points

1. Underneath surface of clutch gear (30). Do not apply grease to teeth or upper surface of gear.
2. Surface of discriminator cam (37).
3. Riveted connection of record ejector link and arm assembly (58).
4. Tone arm actuating lever (35) slide.
5. Hub of tone arm lever (42).
6. Lift section of tone arm lift lever (32).

PARTS LIST

Ref. No.	*Part No.*	DESCRIPTION
1	148-97	Record pressure arm
2	S14512	Pressure arm mounting assembly
3	148-96	Record ejector plate
4	S14499	Record ejector cam shaft
5	80-618	Pressure arm spring
6	S14510	Record support plate and cam shaft housing
7	S14496	Record spindle assembly
8	148-83	Tone arm housing
9	78-561	Cartridge socket
9A	80-605	Socket tension spring
10	S11473	Cartridge and needle assembly
11	S14513	Tone arm shaft assembly
12		Tone arm set-down adjustment screw
12A	80-619	Tone arm set-down adjusting spring
13		Tone arm height adjustment screw
14	112-485	No. 4-40 x ¼" B.H.M.S.—steel screw
15	S14514	Tone arm bracket and lift stud assembly
16	43-162	Record ejector housing
17	85-372	Three-position slide switch
18	S14674	Hinge plate assembly
19	S14498	Turntable
20	61-125	Idler wheel
21	S14488	Oscillating lever and gear assembly
22	S14682	Idler wheel stud and washer assembly
23	80-617	Idler wheel spring
24		Motor mounting clip
25	93-903	Steel washer—copper flash
26	125-61	Rubber grommet
27	114-295	No. 8-32 x 5/16" hex hd. slotted S.T. screw
28	S14486	Baseplate
29	141-120	Motor
30	S14487	Clutch gear assembly
31	80-613	Lift pin lever spring
32	117-145	Tone arm lift lever
33	S14491	Discriminator lever assembly
34	S14490	Tone arm actuating lever assembly
35	S14490	Tone arm actuating lever assembly (part of 34)
36	S14493	Trip switch assembly
37	128-45	Discriminator cam
38	117-144	Brake lever
39	93-125	No. 6 int. lockwasher
40	69-141	No. 5-40 x ¼" R.H.M.S.—steel N.P.
41	73-99	No. 8-32 x ¼" slab hd. set screw
42	S14495	Tone arm lever assembly
43	80-614	Brake spring
44	80-616	Tone arm link spring (short)
45	80-582	Oscillating lever spring
46	S14488	Oscillating lever and gear assembly (part of 21)
47		Gear pawl tooth
48	80-582	Oscillating lever spring
49	80-615	Tone arm link spring (long)
50	80-582	Pawl spring
51	69-184	No. 8-32 x ¼" R.H.M.S.
52	93-53	1/64" x 11/64" x ⅜" steel washer
53	60-18	Trip pawl
54	S13913	Magnet coil (solenoid)
55	69-43	No. 8-32 x ⅜" R.H.M.S.
56	73-112	No. 8-32 x ½" slab hd. set screw
57	43-160	Turntable gear housing
58	S14494	Record ejector link and arm assembly